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WATER SUPPLIES ON CANADIAN GREAT LAKES VESSELS

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By authority of an Order in Council dated June 19, 1923, regulations were drawn up regarding the standard quality of water for drinking and culinary purposes aboard vessels engaged in navigation on the Great Lakes and inland waters of Canada.¹ For various reasons the enforcement of these regulations has been attempted as yet only on Lakes Ontario, Erie, Huron, and Superior of the Great Lakes system.

Work on this subject was carried on throughout January and February, 1926, through the medium of a series of lectures given at the schools of navigation and marine engineering that are situated at various ports on the Great Lakes system. In this manner it was possible to get in contact with the coming generation of ships' masters and engineers under the best circumstances and at a time when questions could be asked and answered. The actual field work was commenced about the middle of March, 1925, and was carried on until the end of November.

During the season of 1925, 908 routine visits to Great Lakes vessels were made by health officials, in addition to which certain examinations of steamship water systems were carried out in response to special requests by steamship operators.

As during the season of 1923 and 1924, a physical examination was made of the pumps, pipes, tanks, outlets, and water purification apparatus, if any (in addition to a quick reconnaissance of the vessels themselves for possible sources of contamination of the water supplies), in order to determine the eligibility of the various passenger steamships for the certificates required by the Order in Council (P. C. 1091).

In addition to the physical examination of water-supply systems installed on various steamships, information and advice of a technical nature were given to navigation companies. Plans of proposed water-supply systems for new steamships in the course of construction, on being submitted for approval, were duly checked up, and were corrected when such action seemed advisable.

¹ These regulations are practically identical with the United States Interstate Quarantine Regulations. The Canadian Department of Health and the United States Public Health Service have worked in close cooperation in enforcing their respective regulations, to the mutual advantage of the two countries.

During the season, visits were made to the docks at the terminal ports of the various fleets of steamships engaged in this traffic, and correspondence and interviews with health and navigation officials and other persons concerned were carried on regarding the certification of water supplies ashore, compliance or noncompliance with the regulations, and other related matters. In this connection it was possible greatly to improve the water-supply service at the dock at Sault Ste. Marie, Ontario.

Considerable cooperative work was carried on, as in former years, with the representatives of the United States Public Health Service, by mutual visits to international points. Through the medium of the mails, reports of inspection of vessel water-supply systems, water-analyses reports, certification of shore-water supplies, lists of steamships certificated, etc., were exchanged. So, also, by arrangement with the United States Public Health Service, intermittent inspection of vessel water-supply systems on Canadian steamships passing through Sault Ste. Marie, Mich., was carried on by the health inspector stationed at that point.

Throughout the season, steamship companies operating vessels in Great Lakes traffic have been supplied regularly with copies of water-analyses reports and, wherever it has seemed advisable, attention of the management of these organizations was drawn to flagrant carelessness or violations of the regulations.

A measure of the size of the problem presented in the supervision of vessel water supplies is given by consideration of the following facts:

The through St. Lawrence and Great Lakes route, between Montreal and the head of Lake Superior, comprises 74 miles of canal, with 49 locks, and 1,140 miles of river and lake waters, or a total of 1,214 miles.

The Canadian fleet was augmented by the addition of 42 steel bulk freighters, of which number 25 were built in Great Britain and delivered to the Lakes for the grain and coal trade. The newly established Tree Line Steamships Limited, a subsidiary of the Ogilvie Flour Milling Co. of Montreal, brought to the Lakes from France a fleet of 10 steamships that are practically new. Total additions to the fleet did not end here, however, for the attractiveness of the grain rates brought 14 small cargo carriers from overseas ports, so that the number of vessels available for the grain trade to Montreal was the largest in history. In a recent season 5,791 vessel arrivals were reported at Montreal from ports on the inland waters.

Enormous as the shipbuilding program proved to be in 1925, lake and foreign yards are building vessels for future delivery. Five double-deck package freight and bulk carriers were built in a St. Lawrence River yard for the Canada Steamship Lines; 16 ships of Welland Canal size were constructed in Great Britain for the Eastern

Steamship Co. At Midland a bulk freighter 633 feet long over all, 70 feet beam, and 33 feet in depth was launched. This freighter has the greatest length and the broadest beam of the vessels on the Great Lakes system.

The relative extent of the Great Lakes traffic may be conceived by comparing the number of vessels passing through the Sault Ste. Marie Canals with the number of vessels that annually pass through the Panama and Suez routes. The total number of commercial vessels that passed through the Panama Canal for the year ending June 30, 1925, was 4,673, which was almost twice as many as passed through the canal in any year up to 1921. For the fiscal year 1924 the traffic on the Suez Canal totaled 5,121 ships. The total number of vessel passages through the canals at Sault Ste. Marie, Mich., and Ontario for the season of navigation of 1925 was 20,650, or double the combined total for the Panama and Suez Canals.

Similarly, records of commerce passing through the Detroit River during the season of navigation of 1925 show a total of 32,062 vessel passages, as compared with 28,118 for the preceding year (about 15 per cent increase).

With regard to the responsibility for the supervision of the supplies of water for drinking and culinary purposes on passenger steamships engaged in other than ferry service on the Great Lakes system, a general division of the traffic is as follows:

On the Lake Ontario-St. Lawrence River routes the passenger traffic is carried almost entirely by steamships of Canadian register. These vessels obtain their supplies of drinking and culinary water partially from certified sources ashore and partially from overboard en route. As, with only three exceptions, water-purification apparatus has not been installed on these passenger steamships, the drinking and culinary water available is subject to contamination, depending on the regularity with which the storage tanks and distributing systems have been flushed and chlorinated.

On Lakes Erie and Michigan, practically all of the passenger traffic is carried by steamships of United States register. The culinary and drinking water supplies are safeguarded aboard these vessels by water-purification apparatus of approved type.

On the Lakes Huron-Superior service data supplied from official sources show that steamships of Canadian register in 1924 carried 67 per cent of the traveling public. By the installation of water-purification apparatus of approved type and careful supervision of its operation it has been possible greatly to improve the drinking and culinary water supplies of these steamships and bring them to the standard of the regulations.

The necessity for a continued check on vessel-water supplies, although the regulations have been in effect for over two and a half

years, is well illustrated by the following example: In the later part of October there was an outbreak of diarrhea and typhoid fever among the crew of the United States steamship *Lake Gaither* so severe that in making the trip from Detroit to Montreal it was necessary to remove three typhoid patients from this ship on her arrival at Toronto, while five others were treated for typhoid fever after this vessel arrived at Montreal. All other members of the crew were required to report at the Montreal General Hospital for antityphoid inoculation.

The typhoid fever rate of a community is usually accepted as furnishing an indication of the sanitary quality of its drinking water and food. Unfortunately it is somewhat difficult to obtain statistics of sickness of former passengers after they have left the steamships. The reservation book of a single vessel will frequently carry the names of passengers from points scattered over the entire area from Halifax to Vancouver. A measure of the typhoid rate for the crews of Great Lakes vessels is, however, available in the records of the hospitals at the various ports. Patients who have developed typhoid fever aboard steamships on the inland waters of Canada have been admitted to hospitals over the entire area of the Great Lakes system, from Montreal to Fort William.

Owing to the large number of passenger steamships engaged in tourist traffic that pass through such port cities as Montreal and Quebec, it seems advisable that tests of drinking and culinary water supplies of these steamships should be made at frequent intervals in the near future. An investigation made in the summer of 1925 by the department of health of the State of New York traced the origin of the illness of an American tourist to a Canadian passenger steamship that sails regularly between Montreal and the Saguenay district.

During 1925 a visit to one of the large passenger steamships that ply between Montreal and the lower St. Lawrence River disclosed the condition that the crew's drinking-water tap was located quite close to the deck that formed the floor of a stable maintained aboard this vessel for the transport of horses. A pure supply of drinking water can be maintained only by constant vigilance and regular inspection.

In subsection (b) of section 7 of the regulations it is required that "Ice used for cooling table water shall be a clear and sanitary ice and shall be stored in a clean place, and before the ice is placed in the water or water receptacle it shall be carefully washed and handled in a sanitary manner."

Serious doubts having arisen in the minds of the officials in charge of the laboratory of health at Sault Ste. Marie, Ontario, as to the observance of the above regulations, samples of ice were collected from all of the passenger steamships that called at that port during

the season of navigation of 1925. In a large number of instances it was found that the ice in use had been taken aboard at the most convenient point in the form of natural ice. It was noted that, on the steamships *Noronic* and *Hamonic* of the Northern Navigation Co., apparatus had been installed for the manufacture of artificial ice aboard ship.

The samples of ice were examined in accordance with the approved methods of the American Public Health Association. As a result of the work done regarding ice, it was demonstrated that artificial ice of a good sanitary quality may be procured and handled in such a manner that its purity will remain unimpaired.

Since the regulations concerning water supplies for drinking and culinary purposes aboard vessels have been enforced there has been a reduction in the number of typhoid patients put ashore at Fort William from Great Lakes vessels. In 1923 the records give the number of typhoid cases from Great Lakes vessels hospitalized in Fort William as 14 while the returns for 1925 show no cases from this source.

PRELIMINARY REPORT OF SCREENING STUDIES IN LEFLORE COUNTY, MISS.

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It is unfortunate that sanitarians operating in the malaria belt of the United States have failed to give sufficient attention to the possibilities of accomplishing control of malaria by means of minor or secondary measures that appear to be within financial reach of the families that suffer most from this disease.

The screening demonstrations conducted by the United States Public Health Service at Wilson, Va., in 1915, and at Tosches, Va., in 1916, gave very satisfactory results in malaria reduction. In 1916 the Public Health Service also directed a campaign on a plantation near Lake Village, Ark. These demonstrations, however, did not bring out all the facts connected with the value of screening as an antimalaria measure, some of which have been obtained in the present investigational study.

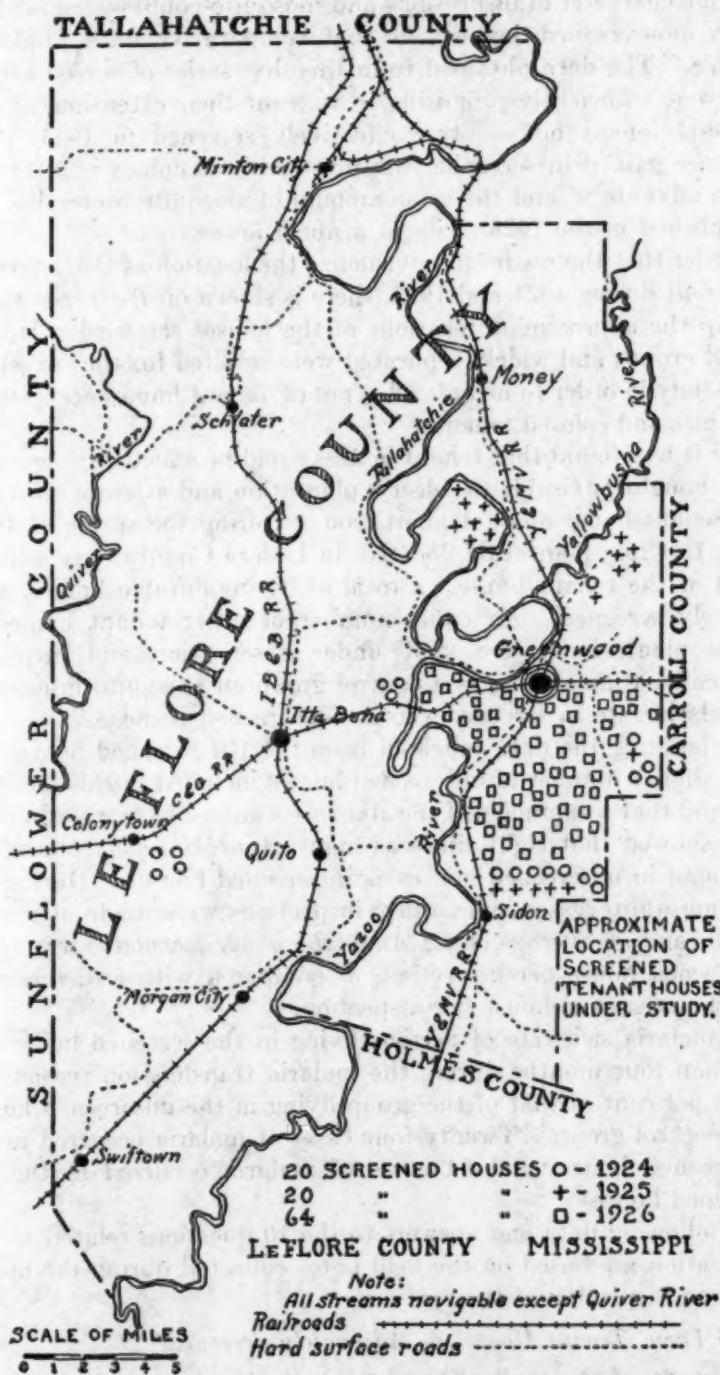
The problem of protecting farm-tenant families in poorly constructed houses from the bites of malaria-carrying mosquitoes is of serious sanitary importance throughout the malaria belt of the United States. In many agricultural districts it may be a number of years before sufficient drainage is secured to cause *Anopheles* mosquitoes to become very scarce, and, for economic reasons, a more rapid and less expensive means of malaria control than that of mosquito destruction is desirable.

The problem of protecting farm tenants from malaria by means of screens was discussed with more than 50 planters in the Mississippi delta region during the spring of 1924; and during these discussions other control measures, such as liquid repellents, smoke smudges, and mosquito bed nets, were also taken up. Some planters thought that farm tenants would not appreciate the protection received, and that the expenditure for screen material was not practical, because the amount expended was greater than the benefits derived. It appears to be a common opinion among the planters that farm-tenant families will not take care of screens, that they willfully destroy the screens, and that proper interest in the care of screening, at least by the general run of tenants, is not to be expected. Little encouragement was derived from these interviews. The planters have had experience with screening on a small and expensive scale, and their belief in its inefficiency is widespread and firmly fixed.

As a part of the study of rural malaria control which was being conducted by the United States Public Health Service in Leflore County, Miss., it was thought worth while to determine the annual cost per farm-tenant family for screen protection, and also, if possible, the reason for the failure of farm tenants to appreciate the value of screen protection. At the same time it was felt desirable to obtain approximate answers to the following questions relative to the problem:

- (1) Can all tenant houses be adequately screened?
- (2) Do the majority of tenants want screens on their homes?
- (3) Is it economically advisable to attempt the screening of all inhabitable tenant houses?
- (4) Will tenants take proper care of screens?
- (5) In case it is shown that tenants will take proper care of screening, will the planters be able to see the real advantage of mosquito protection for their tenants?
- (6) Can tenants be induced to desire screen protection from mosquitoes?
- (7) How long will it take for the general run of tenants to distinguish between effective and ineffective screening?
- (8) What screening materials are most suitable?
- (9) What effective screening methods are economically feasible?
- (10) How long will screens last, and what will be the complete cost per home per year?

The study of methods of screening farm-tenant houses was begun in Leflore County, Miss., early in 1924. During that season 20 tenant houses were screened and accurate data collected on cost of materials and on cost of labor; also frequent inspections were made to determine the effectiveness of the screen in keeping out mosquitoes.



Map showing location of houses screened

The same character of inspections and mosquito counts were made in near-by nonscreened homes, so that comparative data would be available. The data obtained from this first series of screen experiments were sufficiently promising to warrant their extension, and 20 additional tenant houses were effectively screened in 1925. The experience gained in screening the first series of homes in 1924 was used to advantage, and the same amount of mosquito protection was accomplished in the 1925 series at a much lower cost.

In order that the reader may visualize the location of the screening experiment during 1924 and 1925, there is shown on the accompanying map the approximate locations of the houses screened. Houses in small groups and widely separated were selected for the investigational study in order to include all types of tenant homes occupied by both white and colored tenants.

After it was found that tenant houses could be effectively screened, it was thought advisable to select a plantation and attempt to screen every tenant house on that plantation. During the spring of 1926, the W. L. Craig plantation, located in Leflore County, was selected and all of the tenant houses, a total of 64 inhabitable homes, were effectively screened. An equal number of other tenant homes on near-by plantations were kept under observation and inspected periodically, thus serving as a control group on mosquito infestation and malaria rate in screened versus nonscreened homes.

In tabulating the data collected from the 104 screened homes and from a similar number of unscreened homes included in this study, it was found that a summary of the *Anopheles* mosquito catches in these houses showed that eight times as many *Anopheles quadrimaculatus* were found in unscreened houses as in screened houses. During the active mosquito season, bimonthly inspections were made at regular intervals and an average of 2.2 *Anopheles quadrimaculatus* was noted per screened house per inspection, as compared with an average of 16.5 per unscreened house per inspection.

The malaria sick rate of persons living in the screened houses for more than four months during the malaria transmission season was only 29 per cent of that of the group living in the unscreened homes of the control group. Twenty-four cases of malaria occurred in the 104 screened houses and 84 cases of malaria occurred in the 104 unscreened houses.

The following data and answers to the 10 questions related to this investigation are based on the field notes collected during the installation and inspection of the screening.

Can all Farm Tenant Houses be Adequately Screened?

This study of the application of screen to plantation tenant houses appears to indicate that practically all inhabitable tenant houses can be effectively screened, although it will frequently be necessary to do

more or less chinking work to close the numerous cracks, knot holes, and misfit joints in walls and ceilings. Those who have not seen such work done are usually surprised to learn how relatively easy and inexpensive it is to chink holes and cracks with paper or cloth, old rags, etc., or to cover floor cracks and knot holes with small strips of tin. The use of gummed paper strips is often advisable, and it has been found advantageous to tack these strips with small tacks, some 6 to 12 inches apart in addition to gluing them. When, in order to cover the cracks in the rough wood, it is desirable completely to cover the walls, paper can be used. It was found that heavy brown Manila paper was satisfactory for this purpose, and very cheap. The cost of this paper and the tacks for covering a room 16 by 16 by 9 feet, including the ceiling, is about \$3.

Do the Majority of Tenants Want Screens on Their Homes?

Undoubtedly, yes! The majority of tenants in the territory investigated want screens. The following incident should answer the question:

In Leflore County, Miss., a planter called ten of his tenants into his office. Without any preliminary explanation the planter astounded them with the following proposition: "I am going to give each one of you men your choice of one of four things, on condition that you are not to talk to each other about your preference until after you have made your selection: (1) You may have your home screened; (2) you may have a new bed net for each bed in your home; (3) you may have a \$1 bottle of mosquito exterminator solution each week during July, August, and September; or (4) I will pay \$10 on your family doctor's bill this summer." The men were silent; then, one by one, they arose and passed into a near-by room, out of hearing of the others. Every man chose screens for his home, and to-day every home on this plantation is screened.

Is it Economically Advisable to Attempt the Screening of all Inhabitable Tenant Houses?

Planters are business men, and it must be realized that they are not in the farming business to accommodate the tenants. The tenants are on the plantations to supply the labor, and the tenant-house is for the purpose of keeping the labor close to the crop. The amount of money invested in tenant houses varies with the management of different plantations. Some managers prefer a \$600 or \$700 tenant house; they claim good tenant houses attract choice tenants. Other managers believe they can produce more cotton by having twice the number of families in \$200 or \$300 tenant houses. The general trend in the delta region, however, is toward better tenant houses. In the past, mosquitoes and health protection have been considered the tenant's responsibility, and only at a time of malaria epidemics or

when sickness greatly reduced the needed labor supply has the planter been much concerned about the health and living conditions of his tenants. He often appeared to be more concerned about the gnats and flies pestering his mules, because he saw the damage that they did. But times are changing; and the higher the cost of labor, the less becomes the number of working days the planter can afford to lose on account of sickness among his tenants. Therefore, there is a natural tendency toward health improvement in order to conserve labor. Lower cost of installation and proper care of screens should bring about a more general use of screens for tenant homes.

Will Tenants Take Proper Care of Screens?

Contrary to the former belief of most planters and business men of this section, tenants do take reasonably good care of screens when they understand the importance of doing so. This has been definitely proved in the case of the tenant homes under observation. The screening on 20 of the houses, which was installed three years ago, has been well cared for, is in excellent condition, and will be effective for the fourth year. The 20 homes screened two years ago, and the additional 64 homes screened in 1926, have also been given satisfactory care. Some of these houses have been occupied by white and some by colored tenants, many of the families having from three to eight children. Eight of this series of 20 houses which have been screened for more than three years have had three separate sets of tenants during that period.

In Case it is Shown that Tenants Will Take Proper Care of Screening,

Will the Planters be Able to See the Real Advantage of Mosquito Protection for Their Tenants?

One can always expect the planter to be on the alert and ready to invest in screening if it can be shown to be to his advantage. Cotton is a crop that may be produced even though there is a temporary interruption of the labor from time to time during cultivation and picking. Since epidemics of malaria have been of rare occurrence recently, the planter is likely to feel that there will be just as many pounds of cotton produced for him without this extra outlay of money for screens on his tenant houses. The scope of screening studies to date has been too small to provide any reasonably accurate data on the actual saving in man hours of labor, which is the essential unit of measurement on which the planter bases his profits and losses.

Can Tenants be Induced to Desire Screen Protection From Mosquitoes?

It was thought that the answer to this question might be based on the care which the tenants gave the screening during this study, and from the expressions of tenants living in unscreened houses, who

would actually build the screen doors and screen windows themselves, if the screening materials were furnished by the planter. The investigations indicated that negro tenants readily acquire an interest in and desire for mosquito protection, and, generally speaking, a large percentage of them would do the work effectively themselves if they thoroughly understood what it was for, and if they could get the screening materials.

The tenant's life is usually one of change, buoyed by hope. The colored tenant is largely guided by the plantation manager. The white tenant thinks he can plan his own destiny and often finds he is mistaken. Near the end of the season he becomes dissatisfied and moves to another place, and does so again and again in the years that follow. The white tenant also usually complains more about his housing conditions than does the negro tenant. The latter seems to be more appreciative of his screens and takes better care of them than does the white tenant under similar circumstances. The negro looks forward to having his home inspected, and it is not difficult to teach him to repair minor breaks in the screens. The white tenant is usually more delinquent about repairs and often seems to be slightly resentful of house inspections. He would rather tell about the screens while at a distance from the house than have the condition of the screens inspected on the premises. The negro tenant will discontinue the use of smoke smudges and bed nets (the usual prevailing custom) shortly after the installation of screens on his home.

How Long Will it Take the General Run of Tenants to Distinguish Between Effective and Ineffective Screening?

At the beginning of these studies it seemed to be quite difficult for most tenants to realize the importance of properly fitted screens, but this was overcome by simple, painstaking explanation of screen construction and its purpose. There was a noticeable change within a year in the territory under study. The following story has been used when it was desired to interest the farm tenant in proper screening methods and effective screen maintenance, illustrating in simple language the purpose of adequate screening:

In building a jail, the walls, ceilings, and floors are tightly constructed, and bars are placed over the windows and doors, so that dangerous men who are locked in the jail can not get out, even though they try to do so. Now, in screening a house we want to close up all the cracks and holes, and place screens over the windows and make tightly fitting screen doors, in order to *keep out* dangerous insects, such as mosquitoes and flies. These insects try just as hard to get into your house as those dangerous men try to get out of jail.

What Screening Materials Are Most Suitable?

It appears from experience that galvanized iron screen wire, No. 16 mesh, is perhaps the most satisfactory and economical for general use in the delta region.

What Effective Screening Methods are Economically Feasible?

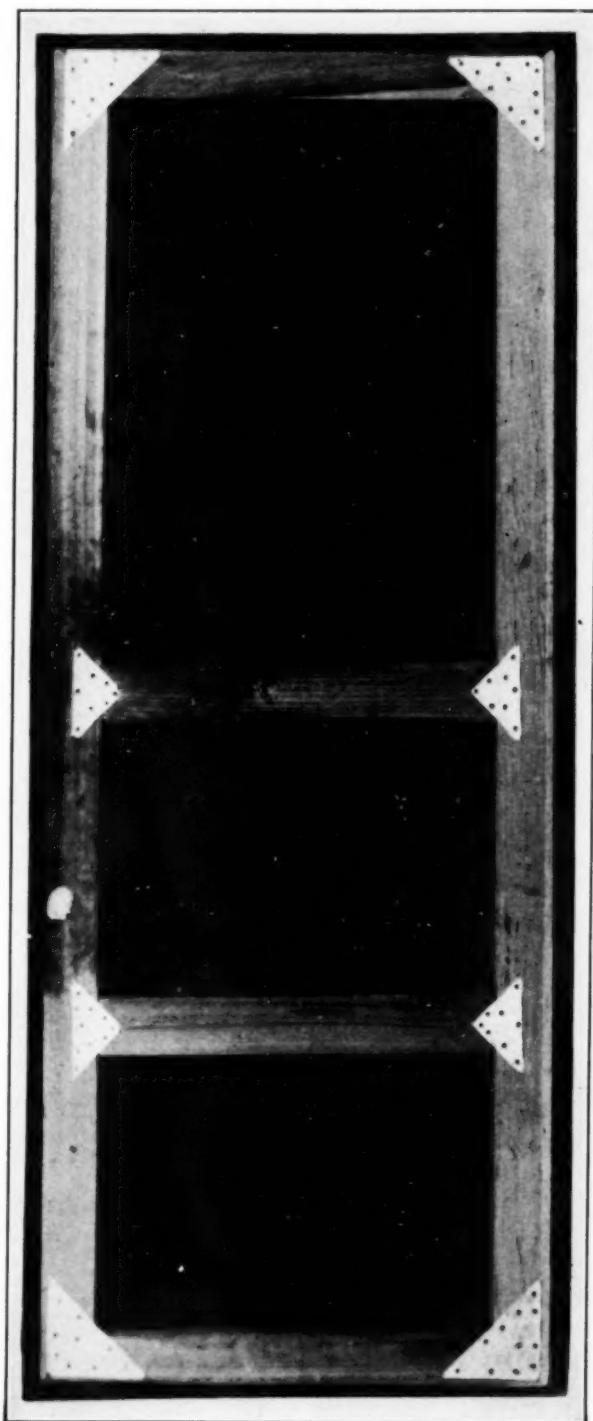
(A) *For windows.*—In this screening study it was deemed best to screen the entire window instead of the lower half, which is the usual custom in this territory. In most instances the upper window sash is stationary, and at first it might seem unnecessary to cover this sash with screen; but a broken pane of glass may seriously reduce the efficiency of the screens, and if the entire window is covered, a broken pane of glass does not matter.

Screen wire was tacked on the outside of the window frame, the full length of the window, allowing about an inch lap along the top and along each side, and a 2-inch lap at the bottom. It is the bottom of the screen window that receives the most wear; therefore an additional inch of screen wire is needed there. The screen wire was fastened in place by a row of tacks spaced about 2 inches apart along the top of the window and at the side, and by two parallel rows, with an intervening space of 1 inch, across the bottom. When metal screening was used, no advantage was gained by tacking the screen to the lower edge of the upper sash, or by placing a cross bar in the center of the window. Tacking the top, the sides, and the bottom in the manner described is sufficient.

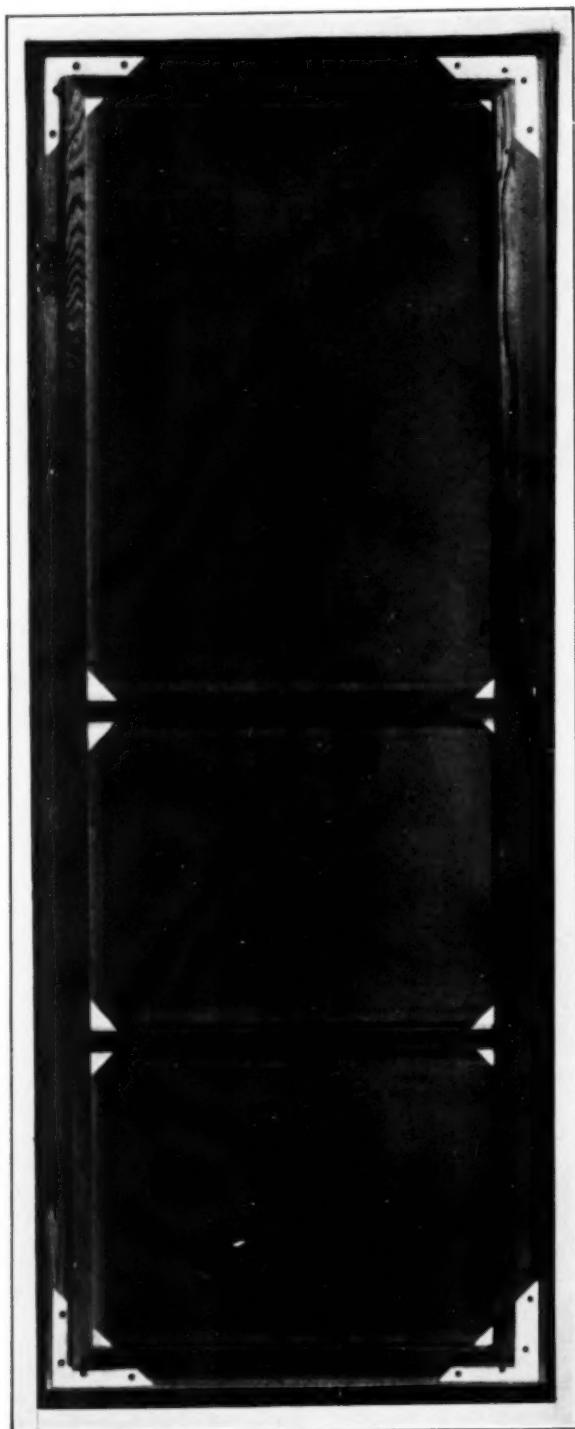
(B) *Screen doors.*—Screen doors made of lumber 1 inch thick and 3 inches wide proved to be satisfactory in every way. White surfaced lumber has a better appearance, but rough lumber is as serviceable and is about 25 per cent cheaper. Any kind of lumber will do if it is dry, unwarped, and free from knots.

The screen door must be made to fit tight, either to the outside of the casing or the inside of the door jamb. Screen doors that are fitted to the outside of the door casing are surrounded by a 1-inch by 1-inch strip, which acts as an additional casing to the screen door.

Screen door construction.—The corners of the screen door are put together after the ends of the sides and the top and bottom pieces are cut at an angle of 45 degrees. By using a miter box even inexperienced persons will find no difficulty in making perfectly fitting joints. Twenty-four gauge galvanized-iron triangle plates (6-inch squares cut in half diagonally) are placed on all corners and also on the cross bars on each side of the door, making a total of 16 metal plates for each door. (See illustrations of door.) From 6 to 10 nails are driven through each metal plate and clinched, giving 128 fixed contacts per door. This construction makes a strong and rigid door that will not sag and will stay in place under fairly rough usage.



Inside of screen door



Outside of screen door

In constructing screen doors of this type, the metal plates on one side of the door may be put on with screws, using 6 to 10 screws per plate. When screws are used to fasten on the plates, it is best to place the screen wire on the door and make the plates overlap the corners of the screen wire; then, in case it becomes necessary to rescreen a door, the plates can easily be removed, the door rescreened, and the plates replaced without injury to the door. The screen wire

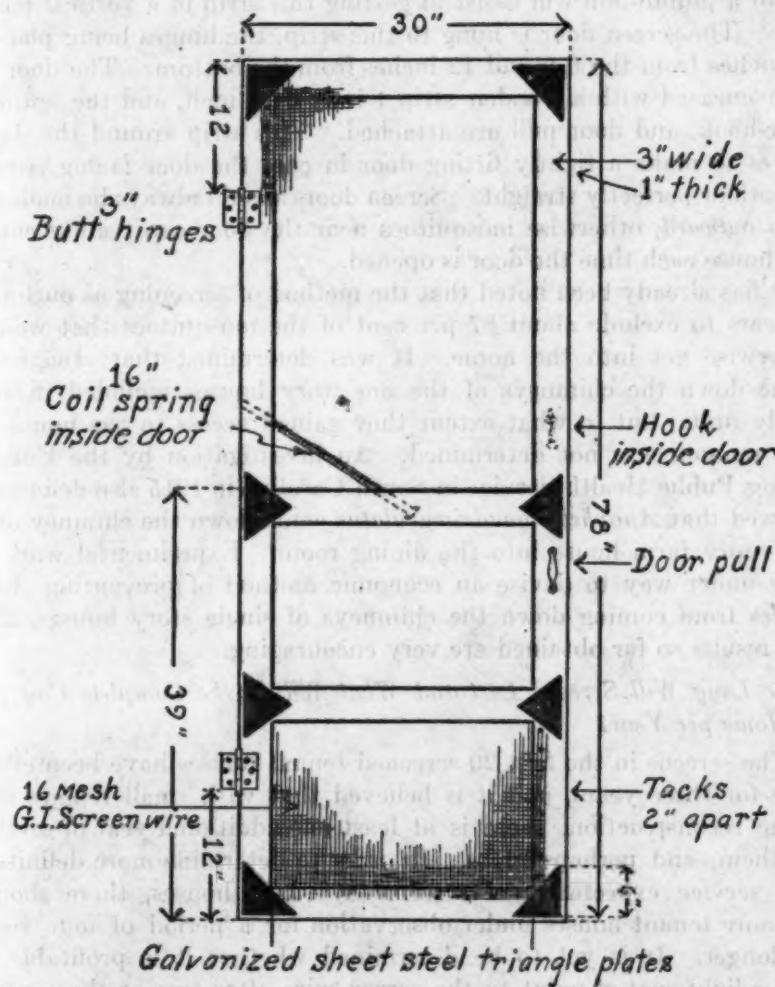


FIG. 1.—Details of construction

is fastened to the door by placing tacks 2 to $2\frac{1}{2}$ inches apart across the top, down each side, across the two cross bars, and across the bottom.

The proper hanging of the screen door is very important. If the door is swung inside the door jamb, care must be taken to see that the hinges are set properly in order to have the door swing clear.

Houses resting on wooden blocks or temporary foundations often settle and sag, causing screen doors that are fitted to the inside of the door jambs to become tight, and unless the hinges are then reset, the door becomes useless. For houses of this type, it is best to swing the screen door on the outside of the door casing. This can be done by first nailing a strip of the same thickness as the screen door, about 3 inches wide, and full length, on the outside of the door casing. The use of a plumb-bob will assist in getting this strip in a vertical position. The screen door is hung to this strip, the hinges being placed 12 inches from the top and 12 inches from the bottom. The door is then encased with a wooden strip 1 inch by 1 inch, and the spring, door-hook, and door pull are attached. This strip around the door serves to make a tightly fitting door in case the door facing is not smooth or perfectly straight. Screen doors should always be made to *open outward*, otherwise mosquitoes near the door can readily enter the house each time the door is opened.

It has already been noted that the method of screening as outlined appears to exclude about 87 per cent of the mosquitoes that would otherwise get into the home. It was determined that *Anopheles* come down the chimneys of the one-story houses included in the study units; but to what extent they gained access to the house in this manner was not determined. An investigation by the United States Public Health Service in South Carolina in 1915 also definitely showed that *Anopheles quadrimaculatus* came down the chimney of a two-story farm house into the dining room. Experimental work is now under way to devise an economic method of preventing *Anopheles* from coming down the chimneys of single story houses, and the results so far obtained are very encouraging.

How Long Will Screens Last and What Will be the Complete Cost per Home per Year?

The screens in the first 20 screened tenant houses have been effective for three years, and it is believed that with small repairs and some reconstruction, there is at least one additional year of service in them, and perhaps more. In order to determine more definitely the service expectancy of screens in tenant houses, there should be more tenant houses under observation for a period of four years or longer. It is yet to be determined whether it is profitable to add a light coat of paint to the screen wire after two or three years of service. Experiments are under way to determine the value of repainting in increasing the lasting quality of screen wire.

The itemized costs of materials and labor are given at the end of this article. It is of interest to note that the experience gained in the first two years of screen application has led to a reduction of cost in installing screening on tenant houses. In the series of 20 houses screened in 1924, containing 57 windows and 54 doors, the

total cost was \$370.99, or an average of \$18.55 per house. In the second series of houses, screened in 1926, which contained 55 windows and 56 doors, the total cost was \$149.83, or an average of \$7.49 per house. As is shown below in the table of comparative costs, the difference is mainly in the labor cost. Only unskilled labor was used during the 1925 series. In the third series, which consisted of a group of 64 houses screened during 1926, containing 273 windows and 213 doors, the average cost of screen protection per house was \$8.51.

It should be stated here that of this third series of 64 houses, 27 had no previous screening. All new materials, including wire screening, were used to cover 117 windows and build 90 doors. The cost of screening 117 windows, at \$0.42½ per window, was \$49.72½, or \$1.84 per house. The cost of building and screening 90 doors, at \$2.03 per door, was \$182.70, or \$6.76 per house. The total cost for the 27 houses was \$8.60 per house.

Some screen protection had been attempted on the remaining 37 houses of this 1926 series, and many of the screened doors contained lumber that could be used for rebuilding screen doors to fit the respective houses. These rebuilt doors were furnished with new screen wire, new metal corners, new hinges, new door pulls, and new hooks and eyes. The cost of screening this series of 37 houses was as follows: One hundred fifty-six windows, at \$0.42½, \$66.30; 123 doors, at \$2, \$246; total cost, \$312.30, or \$8.44 per house. The cost of screen protection per house of the 1924 series for the three years has been \$6.19 per year, and the screening will probably remain intact for at least one more year. Should the screening of the houses in 1926 series last only three years, the cost of the screening per house will average less than \$2.84 per year.

In this connection it is interesting to note that it is common for the better class of negro tenants to buy one or two mosquito bed nets every year, which cost \$2.50 each; but as the industrious colored house-wife frequently decides that these beds nets should be washed, they are seldom of any use the second season. The majority of those examined were found to have been torn during the first season of use.

MATERIAL USED FOR SCREENING DOORS AND WINDOWS

Window materials:

Galvanized iron wire screening, No. 16 mesh.

Tacks—regular sign card size, ½ inch long.

Door materials:

Lumber—cypress, pine, oak, or poplar.

Nails—3-, 6-, and 8-penny common wire.

Butt hinges—3 by 3 inches; screws, ½ inch long.

Door hooks and eyes.

Coil door springs—16 inch (¼-inch diameter).

Door strip wood—½ by ½ inch.

Door pulls—small wire type or spool.

Tacks—regular sign card size, ½ inch long.

Galvanized wire screening, No. 16 mesh.

Galvanized sheet steel triangles, 24 gauge, 6-inch square plates, cut in half, diagonally.

Comparative costs of materials for screen doors

	1924	1925	1926
(Coogle, Foster, and Chambliss)	(Coogle and Chambliss)	(Coogle, King, and Chambliss)	
Lumber	\$0.423	Lumber	\$0.445
Galvanized plates	.110	Galvanized plates	.125
Screen wire	.040	Screen wire	.045
Hinges	.330	Hinges	.128
Nails and tacks	.037	Nails and tacks	.025
Springs	.100	Springs	.05
Hooks and eyes	.100	Hooks and eyes	.03
Door pulls	.000	Door pulls	.03
Door strips	.000	Door strips	.07
Screws for hinges	.000	Screws for hinges	.06
	1.740		1.408
			1.475

Comparative costs of labor for construction and erection of doors

Three hours 5 minutes at \$0.448 per hour, \$1.38. For construction only.

Total cost per door in place, \$5.65. This cost is based on the construction and erection of 54 doors.

Three hours at \$0.25 per hour, \$0.75. Cost of labor per door for construction and erection.

Total cost per door in place, \$2.15. This cost is based on the construction and erection of 56 doors.

Two hours 47 minutes at \$0.20 per hour, \$0.556. Cost of labor per door for construction and erection.

Total cost per door in place, \$2.03. This cost is based on the construction and erection of 90 doors.

Comparative costs of screen windows

(Screening over full window outside)

	1924	1925	1926
(Coogle, Foster, and Chambliss)	(Coogle and Chambliss)	(Coogle, King, and Chambliss)	
Estimates based on cost of 57 windows:	Estimates based on cost of 55 windows:	Estimates based on cost of 218 windows:	
Screen wire	\$0.444	Screen wire	\$0.352
Tacks	.012	Tacks	.015
Labor cost	.700	Labor cost	.110
	1.166		.535
			.425

RATS RESPONSIBLE FOR FOOD INFECTION

The following, regarding the percentage of rats found infected with bacteria pathogenic for man, and, therefore, potential food poisoners, is taken from the Weekly Bulletin for April 2, 1927, issued by the California State Board of Health:

In spite of active campaigns against wild rats in some cities, the danger of food poisoning from them is still an important problem, and in cities where no eradication is attempted the danger is probably much greater.

This conclusion has been reached by two members of the staff of the University of California Hooper Foundation for Medical Research, Director Karl F. Meyer and K. Matsumura, as a result of a survey of disease-carrying rats in San Francisco completed recently.

With the aid of the United States Public Health Service, 775 wild rats were gathered at various places in the city, and of this number 58 were found to be infected with one or two bacterial diseases capable of transmission from individual to individual.

Approximately 2 per cent of the rodents carried bacteria in the intestinal tract and were capable of shedding highly virulent bacilli in their droppings, and thus of infecting food. The disease-carrying rats proved to be about 6 per cent in the vicinity of slaughter houses, retail, and second-class residential districts.

In addition to offering this information to encourage those already fighting food-poisoning epidemics, the authors believe it should serve as a warning to

those cities making no efforts to control rodents. Comparing the fairly good conditions of California with other places, the authors say: "If the data presented picture conditions as they exist in the community with a scattered rat population, then it is theoretically reasonable to fear that in other cities or towns with a prolific, undisturbed rodent class, a higher morbidity will increase the carrier rate."

The widespread infection of the rats of the city leads to the conclusion that food may be contaminated either at its source or in the home. In trying out the pathogenicity of the bacteria, small quantities of the droppings were placed in the food of kittens and tame rats. They all became seriously sick in from 18 to 24 hours.

This problem is aside from that of rat plague and represents part of a study made by the Hooper foundation on methods of preventing food poisoning. In another investigation carried on by Doctor Meyer and A. P. Batchelder, in Oakland, it was discovered that there are four rat diseases carried by rodents in that place, namely, hemorrhagic septicemia, plague, rat typhoid, and pseudo-tuberculosis.

COURT DECISIONS RELATING TO PUBLIC HEALTH

Unvaccinated child denied admission to public schools.—(New Hampshire Supreme Court; *Cram v. School Board of Manchester et al.*, 136 A. 263; decided January 5, 1927.) The plaintiff sought by mandamus to compel the admission of his unvaccinated daughter to the public schools, a State law requiring the vaccination of pupils. The plaintiff's allegations were as follows:

That vaccination consists of performing a surgical operation by injecting a poison, the ingredients of which are not known, into the blood of said daughter and that will endanger her health and life, and he will not permit it to be done; that any law that requires his daughter to be vaccinated before she can attend the public schools denies him of liberty, health, and happiness that is guaranteed him by the Constitution of said State and of the United States.

The supreme court in its opinion said:

The plaintiff's allegations present a question that has been fully considered in other States and by the Supreme Court of the United States. The uniform conclusion has been that the allegations relate to a legislative question, and that they are immaterial here.

The court also quoted from a prior decision as follows:

It is not for the court to inquire into the wisdom or unwisdom of such legislation. Whether the act "be wise, reasonable, or expedient, is a legislative and not a judicial question."

License from State board of health required for maintenance of sanitarium or asylum.—(New Hampshire Supreme Court; *Diepenbrock v. State Board of Health*, 135 A. 531; decided December 7, 1926.) A State law provided that "No person or corporation shall locate, conduct or maintain a sanitarium or asylum for the reception of persons of unsound mind, or for the treatment of specific diseases, without having first obtained a license so to do from the State board

of health," and also provided that "all facts relating to the character of the proposed sanitarium or asylum and of the applicant shall be thoroughly investigated by said board, who shall, at their discretion, issue a license to such applicant, with such restrictions and regulations as they may deem necessary for the protection of the interests of the State." The plaintiff, a licensed chiropractor, sought by mandamus to compel the State board of health to grant him a license to maintain a sanitarium. The State board of health answered that the plaintiff was maintaining an asylum for the reception of persons of unsound mind, although a license for such an asylum had been refused by the board. The lower court, at the request of the State board of health, enjoined the plaintiff from maintaining the said asylum until duly licensed. The supreme court decided that the lower court had properly denied the plaintiff's motion to dissolve the injunction. The following are extracts from the court's opinion:

The power of the legislature to deal with all matters pertaining to the preservation of life and health can not be doubted. * * * Nor is the particular statute objectionable because it invests the defendants with power to issue licenses at their discretion. * * *

Apparently, the plaintiff does not question the constitutionality of the statute, but claims that, since he is a duly qualified chiropractor holding the requisite certificate (P. L. c. 206, sec. 10), he is not subject to the provisions of chapter 131, or else is entitled to a license as a matter of right.

His contention is without merit. The law applies to all persons indiscriminately. Practitioners of medicine and surgery, as well as chiropractors, are required to pass an examination and receive a license before they are permitted to practice in this State, but the license so received does not permit either a chiropractor or a physician to maintain an asylum for the reception of persons of unsound mind until the State board of health, in the exercise of reasonable discretion have granted a license for that specific purpose. * * *

ECONOMIC STATUS AND HEALTH

In view of the fact that many statements have been made in general terms with respect to the effect, or lack of effect, of economic status on disease prevalence, S. D. Collins, associate statistician of the Public Health Service, has made a collection and analytical review of the available data regarding the bearing of economic status on morbidity and mortality. This study, soon to be issued as Public Health Bulletin No. 165, considers the death rates from specific causes for specific periods of life, in an attempt to find which causes of death vary with economic status, and, of those which vary, which increase and which decrease as economic status falls.

Among adults, death rates for the great majority of the common causes of death tend to be higher among the poorer classes, but death from diabetes, gout, and diseases of the liver tend to be lower among the poorer classes than among the well-to-do.

Among infants, death rates from gastric and intestinal, respiratory, and epidemic infectious diseases are much higher among the poorer classes, but death rates from premature birth, congenital malformations, and other causes associated with early infancy are relatively constant in the different economic classes.

The factors involved in the phenomenon of varying sickness and death rates among different economic groups seem to be of a specific character; but at present, data are not available to show the relative importance of environment, heredity, and selection, all three of which are no doubt important in the problem.

PUBLIC HEALTH ENGINEERING ABSTRACTS

Lead Poisoning. J. C. Aub, L. T. Fairhall, A. S. Minot, and P. Reznikoff. London, 1926. Bailliere, Tindall & Cox. 265 pp. Review, in the *Journal of State Medicine*, Vol. 35, No. 1, January, 1927, p. 61.

"This work constitutes volume 7 of medicine monographs and contains a full report of the study of lead poisoning carried out at Harvard Medical School. As lead intoxication is a common cause of industrial poisoning, the publication of this monograph is opportune. It represents a vast amount of work, and much of the experimental work is original. Doctor Aub and his collaborators have studied the problem of lead poisoning from all points of view. The chemical studies are interesting. Lead is found to exist in the blood only in very small amount. It has generally been thought that lead exists as an albuminate, but the writers conclude that in the blood it is present in colloidal suspension rather than in solution and probably as colloidal lead phosphate. This book is a valuable contribution to a subject of great importance in industrial medicine and public health. It can cordially be recommended to industrial physicians, general practitioners, and public health workers, and deals with the subject in an exhaustive manner. Mention must be made of the copious bibliography comprising 500 references."

Carbon Monoxide Poisoning in Industry. May R. Mayers. *American Journal of Public Health*, Vol. 17, No. 2, February, 1927, p. 108. (Abstract by Leonard Greenburg.)

The bureau of industrial hygiene of the State of New York is engaged in making a study of carbon monoxide in industry. The object of the study is to determine the precise extent of the hazard in the State and the conditions producing this hazard; and also the determination, by means of physical examinations, of the physiological effects of chronic exposure to relatively small concentrations of the gas. The study so far conducted consists of seven air tests which showed a concentration of carbon monoxide ranging from 2.3 to 11 parts per 10,000 in certain service stations. The carbon monoxide in the blood of the workers studied ranged from 2.3 per cent to 40 per cent saturation. The oxygen content of the blood examined ranged from 2.4 volumes per cent to 10.8 volumes per cent, the normal being approximately 19 volumes per cent. The average value was found to be 5.8 volumes per cent. The hemoglobin ranged from 40 per cent to 154 per cent, apparently showing a compensatory tendency to increase in amount.

Doctor Mayers presents a very interesting discussion of the peculiar ashen pallor associated with headache which is usually found in workers exposed to carbon monoxide for any period of time. Her belief is that the headache might

possibly be due to an increased intracranial pressure caused by the hyperemia of the large blood vessels of the brain.

The study of the inorganic ions in blood was undertaken, but so far has not yielded any definite results.

Sewage from Lower Merion Pumped to Philadelphia System. Francis S. Friel. *Engineering News-Record*, Vol. 98, No. 4, January 27, 1927, pp. 160-161. (Abstract by A. H. Wieters.)

This article describes a sewerage system serving Gully Run, a high-class suburban development of Philadelphia. Due to the undesirability of locating a sewage treatment plant in a residential district and to the necessity for a very high degree of purification owing to the fact that this territory is on the drainage area of the Schuylkill River, from which Philadelphia procures part of its water supply, it was decided to pump the sewage into the Philadelphia sewers.

Unusual features involved were the choosing of two 450 g. p. m. horizontal, electrically driven, two stage, automatically controlled, centrifugal pumps; a static head of 186 feet; the construction of a pump station where the ground water level is 9 feet above the pump floor; the successful construction of sewer in a continually wet ditch; the restoration of water to a spring, the supply of which was cut off during sewer construction; and the beautification of the pump house and surrounding grounds.

Stream Pollution—How It Can Be Stopped. C. N. Harrub, Consulting Engineer, Nashville, Tenn. *Water Works Engineering*, Vol. 80, No. 4, February 16, 1927, pp. 215-216. (Abstract by William L. Havens.)

In this article the author emphasizes again the increasing amount of pollution which our water courses are receiving from the admission of both sewage and industrial wastes. The theory of self-purification has been so overworked that many of our streams do not have an opportunity to purify themselves before additional polluting matter is added to the water. Particular emphasis is laid to the problem of acid drainage from coal mines and to the phenol tastes and odors which result from the discharge of industrial wastes into many of our rivers. As a remedy for these conditions it is suggested that everything possible be done to strengthen the State health departments in the work they are doing. In this way we will be in a position not only to preserve our waters in a usable condition but also to avoid the difficult and expensive corrective measures to which some of our States have already been put.

Recent Developments in Mechanical Devices for Sewage Treatment. G. L. Fugate. Proceedings of Eighth Texas Water Works Short School, Texas Section, S. W. Water Works Association, January 18-23, 1926, Fort Worth, Tex., pp. 156-169. (Abstract by G. N. McDaniel, jr.)

Pumping equipment has been the source of trouble at sewage treatment plants as solids cause stoppages and are injurious to rotating parts. Recently a new pump has been developed which will pass large solid bodies without clogging and with a fairly high mechanical efficiency. As an example, an 8-inch pump will pass a 6-inch ball. Improvements have been made on both coarse and fine screens. Coarse screens may be obtained with an automatic device for raking or cleaning. The most advanced type of fine screen consists of a revolving drum covered with perforated plates through which the flow passes. A new method of agitating sewage in the presence of air in the "Activated Sludge Process" is the use of impellers at the surface of the liquid to create a splashing effect. By combining this method with the compressed air method a power saving of two-thirds has been estimated. Solids may be removed from the bottom of a settling tank by slowly revolving arms. An economy in construction results with the use of such equipment. Vacuum filters and dryers are used to remove the moisture sludge.

Stream Pollution by Wastes from By-Products Coke Oven. R. D. Leitch. *Public Health Reports*, Vol. 40, No. 39, September 25, 1925, pp. 2021-2026. (Abstract by E. L. Filby.)

Phenol wastes in a water used for municipal supply may create serious nuisance which may increase as industry does unless preventative measures are taken (which has been done). Nuisance can be prevented. Coke quickening apparently is the best method of disposal of wastes containing phenol. These wastes should not be allowed to enter streams. Benzol scrubbing method is worthy of investigation on practical basis.

Water Purification at Detroit, Mich. George H. Fenkell. *Water Works*, Vol. 66, No. 2, February, 1927, pp. 78-82. (Abstract by M. S. Foreman.)

This article describes some of the past, present, and future conditions in water purification at Detroit, Mich. The water department is considered more and more as a public service utility rather than as a branch of the city government. Better service is demanded by citizens of large cities; and as a result, favorable legislation is passed for the improvement of water supplies.

Changes of water supply at Detroit. The Detroit River has been the source of the city's water supply, and for more than a century it has received but little contamination. Up to the year 1913 untreated Detroit River water was used for the city supply. During the years 1913-1915 calcium hypochlorite was used, and in 1915 chlorine gas was employed to sterilize the water. An experimental filter plant was built in 1920 in order to study taste and odor, due to chlorine, and the elimination of suspended matter.

Conditions at Detroit and Chicago are very similar. The increase in the number of consumers, the hardness, turbidity, and average temperatures of water, the elevation of cities, and the chlorination of the water of the two cities are similar.

General method of filtration. The method is divided into four parts, as follows: A low lift pumping station which will raise the water to above the surface of the ground; a coagulating basin; a number of filter beds; and a clear water basin or reservoir. Between the pumping station and the coagulating basin, chemicals are added. Filtration is accomplished by passing the water through a bed of sand. This process removes about 67.6 per cent of the bacteria that are present, and in conjunction with chlorination a total removal of 98.8 per cent was obtained.

Subjects on which varying opinion is held. There is a considerable difference in time allowed for sedimentation of coagulated water. This process is not very well understood. The area and depth as well as the required capacity for any given case must receive further study. There is also a wide divergence of opinion as to the advisability of covering coagulating basins in northern latitudes. Other problems include the design of settling basins, the size of filter units, and the use of air in washing filters.

The matter of storage. The design of the clear water basin frequently receives too little attention. With an increase of filter capacity of 50 per cent, the storage is reduced to 0.05 day. If the filter capacity were increased to 80 or 90 per cent excess capacity, the use of a clear water basin for equalizing purposes is unnecessary.

Future developments. With the continual demand for better water it seems probable that filters will be installed to remove practically all of the turbidity and plankton. The bacteria requirements have been increased. Chlorine has removed practically all microscopic life. Ultimately a softer water must be furnished. There is also the possibility of dual water mains. Finally, discoveries and improvements through scientific research must be utilized to produce better service or a reduction in charges.

Elimination of Cross Connections Reduces Hazard of Typhoid Fever. Anon. *Water Works Engineering*, Vol. 80, No. 5, March 2, 1927, p. 296. (Abstract by William L. Havens.)

The Kansas State board of health has recently passed a regulation requiring the elimination of by-pass piping around treatment processes in water purification plants and all cross connections between public and private water supplies. Where the private supply is submitted to regular inspection and analysis or, in special cases, where the private supply appears necessary as an emergency protection, cross connections are maintained but will eventually be eliminated. The administration of the regulation in Kansas has resulted in the listing of 138 cross connections, of which 29 have permits based on inspection and satisfactory analysis, 28 have been provided with a double valve and bleeder arrangement, and 37 have been severed.

Have New Methods Improved Water Purification? C. Arthur Brown, Engineering Bureau, Water Purification, American Steel & Wire Co., Chicago, Ill. *Water Works Engineering*, vol. 80, No. 5, March 2, 1927, pp. 273-274 and 312-315. (Abstract by William L. Havens.)

Of the several branches of the art of water purification, many have shown considerable improvement during the past 10 years. In the pumping feature the trend is apparently toward the substitution of electrical power for steam. More and more attention is being given to the use and design of preliminary settling basins and to their arrangement so that various compartments can be used or by-passed, as the necessity demands.

For chemical treatment the present trend is toward measurement and control of flow and toward more complex difficult chemical treatment. The old form of adding alum in the empirical strength solution has been largely supplanted by the newer dry-feed chemical machines and some attention has been given to proportional dry-feed machines which would vary the amount of chemical with the flow of water. Considerable progress has been made in the method of adding lime, since it is now possible to feed and hydrate an ordinary granulated oxide of lime. This new product, known as "pebble lime," is easily granulated and can then be fed from most of the dry-feed devices now on the market. Soda ash was formerly employed as a solution, but it, too, is now being added in dry form by means of the dry-feed machines.

Mixing chambers, which form an almost indispensable part of the modern mechanical filtration plant, are usually either of the "around the end" or the "over and under" type, although some designs are based upon a combination of the two. Still others make use of the hydraulic jump, mechanical agitators, or impeller wheels. Regardless of the type employed, all chemical treatment preceding filtration should be given the water before its exit from the mixing chamber and at a sufficient distance from the exit so that complete and perfect mixing can occur.

It is doubted whether the settling basins of recent design are superior to those designed 10 or more years ago. This seems to be one of the weak points of the modern plant. It is believed that better results would be obtained by the use of shallow basins of careful design than from the unusually deep basins sometimes seen in present construction.

Apparently little progress has been made in the design of the filter itself, and considerable trouble is still experienced from incomplete and imperfect washing. It would appear that a considerable amount of research and experimental work will be required before these troubles can be eliminated, and it will be of great interest to watch the results of the experimental work being carried on at Detroit and Chicago. The equipment for the filter, on the other hand, has shown a marked advance in nearly every particular and is now made of better material

and functions better and more smoothly. Greater attention is also being given to detail and ornamentation of the plant itself and to its surroundings, with the result that modern plants present a better appearance.

Since the early days when only one process was available (the alum was used in connection with the preparation of the water for mechanical filtration), many changes have been made in water treatment. In 1901-2 the first complete water-softening plant was constructed at Oberlin, Ohio. In 1903-4 came the sulphate of iron and lime process, which is still regarded as a standard for the treatment of certain waters. Recarbonating has recently come into use as a means of eliminating incrustations resulting from the softening process. Decarbonating has also been found necessary in many instances in order to prevent corrosion and red water. Double coagulation is also being tried at Cincinnati, with the hope that the amount of chemical required may be reduced. The addition of chlorine has become almost universal, but it is difficult to see how its use can be much more extended.

Ventilation in Relation to Public Health. H. M. Vernon and M. D. Oxon. *Journal of State Medicine*, Vol. 34, No. 12, December, 1926, pp. 683-696. (Abstract by Leonard Greenburg.)

The author of this paper discusses the question of ventilation, with particular reference to health from the point of view of the school, the factory, and the home. In addition to this he includes a discussion of the mortality of coal miners and the question of accidents in relation to atmospheric conditions.

With reference to schools he points out that observations made in 1903 by Kerr at Bradford, England, showed that natural ventilation was inferior to mechanical ventilation. On the other hand, the observations of Kirby and Reed, in Stafford and Derbyshire, produced evidence apparently contrary to this viewpoint. He discusses in some detail the results obtained by the New York State Commission on Ventilation and cites the well-known finding of the commission that, associated with fan ventilated rooms, there was an excess of 18 per cent absences over that found in window ventilated rooms at $66\frac{1}{2}$ ° F. He also mentions the results obtained by Louise Tayler-Jones in the schools of Washington, D. C., which showed that the children attending the open-window schools suffered less from absence causing illnesses than did those children in the fan-ventilated rooms.

In connection with factory ventilation the author cites the data which he and Bedford obtained in a rather complete study. This investigation showed that rooms having an average winter temperature of 67° F. had 2.05 per cent of time lost by sickness, whereas rooms kept at 61.7° (average) had only 1.55 per cent of lost time by sickness. In another study in which four groups of women were employed in the sewing of shoes he found that the percentage of time lost due to sickness was lower in the naturally ventilated rooms, 1.9 per cent, as contrasted with 4.5 per cent in the plenum ventilated rooms.

It is rather difficult to give much weight to Doctor Vernon's discussion of mortality; so many factors enter here that the issue is, to say the least, a complex one. He does point out rather clearly, however, that the percentage mortality from bronchitis and pneumonia for Lancashire and certain other deep-working miners is about 39 per cent in excess of that Derbyshire and certain other miners working at lesser depths. He believes that this comparative mortality difference is, in part at least, brought about by the difference in temperature associated with the difference in depth of the mine workings. Doctor Vernon feels that at high temperatures workmen become less alert to danger and cites the evidence of Davies to this effect. He also cites his own data which show that at dry bulb temperatures of 64.6°, 77.3°, and 81.4° F., respectively, the accident frequency rates were 57 per cent, 80 per cent, and 84 per cent, respectively.

Concerning domestic heating and ventilation he points out the virtues of the chimney as a factor in producing air motion and reiterates the well-known facts concerning the value of the open fireplace as a producer of radiant heat.

Domestic Smoke and Atmospheric Pollution. H. Osborne. *The Medical Officer*, Vol. 36, No. 961, December 25, 1926, pp. 293-295. (Abstract by Leonard Greenburg.)

The only real remedy to the domestic smoke problem in the British Isles is the use of carbonized coal, according to Doctor Osborne. He believes that the restrictions imposed by smoke ordinances are in many places enforced, and in spite of this there is still a very heavy sootfall.

He cites experiments in which ordinary house coal and dry gas coke were burned for a series of 37 days in two grates, the fuels being alternated between the two rooms. The average temperature of the two rooms was maintained very nearly equal (average of 58.9° and 58.6°). The coal consumption averaged 21.8 pounds per day, while the coke consumption was 14.8 pounds per day.

The daily cost of the coal fire was double that of the coke fire, the latter yielding little or no smoke.

POPULATION OF HOSPITALS FOR THE INSANE

Data for October, 1926

Reports for the month of October, 1926, were received from 144 institutions for the care of the insane.

There was an increase in the number of patients during the month of 362, or 0.18 per cent. The number in the hospitals increased 0.02 per cent, and the number on parole or otherwise absent from the institutions increased 2.05 per cent.

First admissions constituted 77.01 per cent of the total admitted during the month; readmissions, 16 per cent, and 6.99 per cent of the total admitted were transfers or not accounted for.

Of the patients discharged, 25.53 per cent were recorded as recovered; 50.82 as improved; 16.19 per cent as unimproved; 4.76 per cent as without psychosis; and 2.70 per cent as otherwise discharged or not accounted for.

There were 1,062 male patients per thousand females at the close of the month.

The patients on parole on October 31 constituted 7.81 per cent of the total.

During October there were 1,566 deaths of patients of the hospitals reporting, which gives an annual death rate of 88.80 per thousand under treatment.

Movement of patient population in 144 hospitals for the care of the insane during October, 1926

Number of institutions included:

Public	109
Private	35
Total	144

Patients on books October 1, 1926:

In hospitals	187, 680
On parole or otherwise absent, but still on books	15, 579
Total	203, 209

Admitted during October:

First admissions	3, 413
Readmissions	709
Admitted by transfer	307
Not accounted for	3
Total received during the month	4, 432
Total on books during the month	207, 641

Discharged during October:

As recovered	558
As improved	1, 111
As unimproved	354
As without psychosis	104
Not accounted for	1
Otherwise discharged	58
Total discharged during October	2, 186
Transferred	318
Died	1, 566
Total discharged, transferred and died during October	4, 070

Patients on books October 31, 1926:

In hospitals	187, 673
On parole	15, 898
Total	203, 571
Male patients	104, 855
Female patients	98, 716

DEATHS DURING WEEK ENDED APRIL 9, 1927

Summary of information received by telegraph from industrial insurance companies for week ended April 9, 1927, and corresponding week of 1926. (From the Weekly Health Index, April 14, 1927, issued by the Bureau of the Census, Department of Commerce)

	Week ended Apr. 9, 1927	Corresponding week, 1926
Policies in force	67, 271, 091	63, 969, 770
Number of death claims	13, 077	17, 105
Death claims per 1,000 policies in force, annual rate	10. 1	13. 9

Deaths from all causes in certain large cities of the United States during the week ended April 9, 1927, infant mortality, annual death rate, and comparison with corresponding week of 1926. (From the Weekly Health Index, April 14, 1927, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Apr. 9, 1927		Annual death rate per 1,000 corresponding week, 1926	Deaths under 1 year		Infant mortality rate, week ended Apr. 9, 1927 ²
	Total deaths	Death rate ¹		Week ended Apr. 9, 1927	Corresponding week, 1926	
Total (68 cities)	7,806	13.7	17.1	872	1,127	71
Akron	36			5	15	54
Albany ³	38	16.5	24.1	4	3	83
Atlanta	72			8	12	
White	34			3	4	
Colored	38	(*)		5	8	
Baltimore ⁴	244	15.5	17.0	28	28	87
White	178		15.4	20	18	77
Colored	66	(*)	26.3	8	10	124
Birmingham	73	17.7	21.7	13	13	
White	32		15.9	4	5	
Colored	41	(*)	30.8	9	8	
Boston	262	16.6	20.1	30	33	84
Bridgeport	34			4	6	74
Buffalo	144	13.7	20.3	17	24	71
Cambridge	32	13.5	18.8	2	6	36
Camden	30	11.8	13.1	3	3	52
Canton	22	10.2	11.4	3	7	71
Chicago ⁵	730	12.3	14.0	87	97	75
Cincinnati	131	16.6	26.0	14	13	87
Cleveland	204	10.8	15.8	28	35	74
Columbus	83	14.9	18.7	2	3	19
Dallas	56	14.0	12.6	8	8	
White	49		11.9	8	8	
Colored	7	(*)	17.4	0	0	
Dayton	54	15.6	9.7	2	3	33
Denver	97	17.4	13.5	8	11	
Des Moines	36	12.6	12.9	4	1	67
Detroit	279	10.9	18.2	50	103	79
Duluth	25	11.3	8.3	0	4	0
El Paso	37	16.9	15.3	9	6	
Erie	24			3	3	59
Fall River ⁶	29	11.4	20.7	4	5	71
Flint	29	10.6	13.4	10	3	163
Fort Worth	44	14.0	7.5	3	1	
White	32		7.8	1	1	
Colored	12	(*)	5.5	2	0	
Grand Rapids	36	11.8	17.7	6	11	88
Houston	58			5	3	
White	35			4	2	
Colored	23	(*)		1	1	
Indianapolis	109	15.2	17.5	11	11	86
White	92		16.8	8	11	72
Colored	17	(*)	22.5	3	0	183
Jersey City	71	11.5	16.6	12	13	90
Kansas City, Kans.	34	15.2	16.9	4	4	78
White	24		15.7	3	4	67
Colored	10	(*)	22.9	1	0	152
Kansas City, Mo.	116	15.8	17.9	10	13	
Knoxville	39	19.9		5		
White	31			5		
Colored	8	(*)		0		
Los Angeles	256			16	22	46
Louisville	95	15.5	22.0	3	17	26
White	75		20.3	3	14	29
Colored	20	(*)	31.1	0	3	0
Lowell	33	15.6	20.8	5	8	96
Lynn	22	10.9	14.0	4	2	106
Memphis	67	19.5	25.0	4	10	
White	36		18.8	2	3	
Colored	31	(*)	36.4	2	7	

¹ Annual rate per 1,000 population.

² Deaths under 1 year per 1,000 births. Cities left blank are not in the registration area for births.

³ Data for 67 cities.

⁴ Data for 63 cities.

⁵ Deaths for week ended Friday, Apr. 8, 1927.

⁶ In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta 31, Baltimore 15, Birmingham 30, Dallas 15, Fort Worth 14, Houston 25, Indianapolis 11, Kansas City, Kans., 14, Knoxville 15, Louisville 17, Memphis 38, Nashville 30, New Orleans 26, Norfolk 38, Richmond 32, and Washington, D. C., 26.

Deaths from all causes in certain large cities of the United States during the week ended April 9, 1927, infant mortality, annual death rate, and comparison with corresponding week of 1926. (From the Weekly Health Index, April 14, 1927, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended Apr. 9, 1927		Annual death rate per 1,000 corresponding week, 1926	Deaths under 1 year		Infant mortality rate, week ended Apr. 9, 1927
	Total deaths	Death rate		Week ended Apr. 9, 1927	Corresponding week, 1926	
Milwaukee	100	9.9	16.2	18	28	84
Minneapolis	107	12.6	15.0	9	11	51
Nashville ¹	48	18.1	22.8	6	8	—
White	28	—	17.6	3	3	—
Colored	20	(*)	36.1	3	5	—
New Bedford	25	10.9	20.5	3	14	33
New Haven	51	14.4	11.5	3	1	42
New Orleans	153	18.8	19.2	26	17	—
White	80	—	14.5	13	8	—
Colored	73	(*)	32.5	13	9	—
New York	1,621	14.2	17.0	175	229	72
Bronx Borough	210	11.8	13.6	19	25	61
Brooklyn Borough	542	12.4	15.4	68	80	70
Manhattan Borough	668	19.2	22.9	73	94	86
Queens Borough	183	9.9	11.1	13	23	56
Richmond Borough	48	17.0	18.6	2	7	37
Newark, N. J.	114	12.8	18.9	11	16	54
Norfolk	29	8.4	9.6	2	0	40
White	21	—	7.0	2	0	65
Colored	8	(*)	14.1	0	0	0
Oakland	48	9.4	10.4	5	6	59
Oklahoma City	40	—	—	4	4	—
Omaha	81	19.3	10.2	10	6	111
Paterson	26	9.4	19.0	2	7	35
Philadelphia	573	14.7	17.7	83	85	71
Pittsburgh	200	16.2	24.4	28	30	98
Portland, Oreg.	67	—	—	5	7	53
Providence	68	12.6	19.7	6	9	51
Richmond	56	15.2	19.3	7	4	92
White	33	—	14.8	4	1	81
Colored	23	(*)	30.3	3	3	114
Rochester	81	13.0	16.2	6	11	50
St. Louis	229	14.2	18.5	9	28	—
St. Paul	61	12.7	14.5	6	5	55
Salt Lake City ¹	35	13.4	17.3	2	2	30
San Antonio	63	15.6	16.8	8	6	—
San Diego	32	14.5	16.6	2	4	43
San Francisco	162	14.7	17.0	5	7	31
Schenectady	21	11.8	18.5	3	3	90
Seattle	74	—	—	1	9	10
Somerville	18	9.2	14.6	4	2	144
Spokane	26	12.4	10.0	0	1	0
Springfield, Mass	31	11.0	17.6	6	8	92
Syracuse	50	13.2	12.7	6	6	77
Tacoma	26	12.7	12.8	2	2	47
Toledo	80	13.7	18.0	5	11	48
Trenton	37	14.1	22.2	7	8	122
Washington, D. C.	128	12.4	15.5	16	21	93
White	76	—	13.2	10	10	84
Colored	52	(*)	22.2	6	11	110
Waterbury	22	—	—	3	5	71
Wilmington, Del.	16	6.6	10.4	3	3	74
Worcester	60	16.0	24.3	7	6	84
Yonkers	26	11.4	13.0	7	5	159
Youngstown	33	10.2	13.8	11	8	154

¹ Deaths for week ended Friday, Apr. 8, 1927.

In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta 31, Baltimore 15, Birmingham 39, Dallas 15, Fort Worth 14, Houston 25, Indianapolis 11, Kansas City, Kans., 14, Knoxville 15, Louisville 17, Memphis 38, Nashville 30, New Orleans 26, Norfolk 32, Richmond 32, and Washington, D. C., 25.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended April 16, 1927

	ARIZONA	Cases	COLORADO—continued	Cases
Chicken pox.....	58		Scarlet fever.....	143
Diphtheria.....	4		Smallpox.....	10
German measles.....	118		Tuberculosis.....	16
Influenza.....	3		Typhoid fever.....	1
Malta fever.....	1		Whooping cough.....	6
Measles.....	153			
Mumps.....	17			
Pneumonia.....	1			
Poliomyelitis.....	1			
Scarlet fever.....	50			
Smallpox.....	4			
Trachoma.....	2			
Tuberculosis.....	9			
Typhoid fever.....	1			
Whooping cough.....	9			
	ARKANSAS			
Chicken pox.....	17			
Diphtheria.....	2			
Influenza.....	42			
Malaria.....	12			
Measles.....	208			
Mumps.....	11			
Pellagra.....	5			
Scarlet fever.....	2			
Smallpox.....	2			
Tuberculosis.....	4			
Typhoid fever.....	2			
Whooping cough.....	42			
	COLORADO			
Chicken pox.....	28			
Diphtheria.....	8			
German measles.....	18			
Influenza.....	1			
Measles.....	177			
Mumps.....	7			
Pneumonia.....	8			
	DELAWARE			
Chicken pox.....	2			
Measles.....	19			
Mumps.....	1			
Pneumonia.....	4			
Scarlet fever.....	12			
Tuberculosis.....	4			
	FLORIDA			
Cerebrospinal meningitis.....	1			
Chicken pox.....	43			
Dengue.....	1			
Diphtheria.....	33			

FLORIDA—continued		Cases	LOUISIANA—continued		Cases
Influenza	5		Smallpox	3	
Lethargic encephalitis	1		Tuberculosis	35	
Measles	102		Typhoid fever	17	
Mumps	16		Whooping cough	15	
Pneumonia	10				
Scarlet fever	24				
Smallpox	30				
Tetanus	15				
Typhoid fever	22				
Whooping cough	25				
IDAHO			MAINE		
Cerebrospinal meningitis—Idaho Falls	1		Chicken pox	18	
Chicken pox	2		Diphtheria	4	
Diphtheria	4		German measles	55	
Measles	4		Influenza	68	
Mumps	74		Measles	119	
Scarlet fever	2		Mumps	11	
Tuberculosis	13		Pneumonia	18	
Typhoid fever	1		Scarlet fever	17	
			Tuberculosis	7	
			Typhoid fever	2	
			Whooping cough	33	
ILLINOIS			MARYLAND ¹		
Cerebrospinal meningitis—Cook County	3		Chicken pox	95	
Chicken pox	304		Diphtheria	40	
Diphtheria	108		Dysentery	1	
Influenza	27		Influenza	55	
Lethargic encephalitis:			Malaria	1	
Cook County	2		Measles	37	
Stephenson County	1		Mumps	22	
Measles	1,901		Ophthalmia neonatorum	2	
Mumps	601		Paratyphoid fever	1	
Pneumonia	304		Pneumonia (broncho)	45	
Poliomyelitis—Franklin County	1		Pneumonia (lobar)	32	
Scarlet fever	288		Scarlet fever	73	
Smallpox	30		Septic sore throat	1	
Tuberculosis	212		Tetanus	3	
Typhoid fever	8		Tuberculosis	115	
Whooping cough	159		Typhoid fever	9	
			Vincent's angina	1	
			Whooping cough	94	
KANSAS			MASSACHUSETTS		
Cerebrospinal meningitis:			Cerebrospinal meningitis	2	
Jewell	1		Chicken pox	258	
Topeka	1		Conjunctivitis (suppurative)	6	
Chicken pox	112		Diphtheria	97	
Diphtheria	9		German measles	27	
German measles	16		Influenza	16	
Influenza	4		Lethargic encephalitis	1	
Measles	1,147		Measles	368	
Mumps	78		Mumps	426	
Pneumonia	31		Ophthalmia neonatorum	39	
Scarlet fever	105		Pneumonia (lobar)	113	
Smallpox	9		Poliomyelitis	1	
Tuberculosis	39		Scarlet fever	494	
Typhoid fever	2		Septic sore throat	2	
Vincent's angina	2		Tuberculosis (pulmonary)	87	
Whooping cough	57		Tuberculosis (other forms)	24	
			Typhoid fever	7	
			Whooping cough	134	
LOUISIANA			MICHIGAN		
Cerebrospinal meningitis	1		Diphtheria	63	
Diphtheria	27		Measles	194	
Influenza	7		Pneumonia	227	
Malaria	8		Scarlet fever	256	
Measles	100		Smallpox	19	
Pneumonia	18		Tuberculosis	147	
Scarlet fever	6		Typhoid fever	6	
			Whooping cough	146	

¹ Week ended Friday.

	MONTANA	Cases	OREGON	Cases		
Cerebrospinal meningitis	4	Cerebrospinal meningitis	1			
Chicken pox	56	Chicken pox	25			
Diphtheria	6	Diphtheria	13			
German measles	2	Influenza	53			
Measles	54	Measles	217			
Mumps	7	Mumps	7			
Rocky Mountain spotted fever	1	Pneumonia	13			
Scarlet fever	63	Rocky Mountain spotted fever	3			
Smallpox	12	Scarlet fever	12			
Tuberculosis	5	Septic sore throat	1			
Typhoid fever	1	Smallpox	15			
Whooping cough	5	Tuberculosis	26			
NEW JERSEY						
Anthrax	1	Typhoid fever	4			
Cerebrospinal meningitis	1	Whooping cough	7			
Chicken pox	293	UTAH				
Diphtheria	113	Chicken pox	27			
Influenza	21	Diphtheria	7			
Measles	78	German measles	13			
Pneumonia	146	Measles	66			
Poliomyelitis	1	Mumps	3			
Scarlet fever	306	Pneumonia	9			
Typhoid fever	4	Scarlet fever	32			
Whooping cough	217	Smallpox	3			
NEW MEXICO						
Chicken pox	16	Whooping cough	32			
Conjunctivitis	2	VERMONT				
Diphtheria	3	Chicken pox	8			
German measles	55	Measles	117			
Measles	122	Mumps	66			
Mumps	36	Scarlet fever	8			
Pellagra	1	Whooping cough	31			
Pneumonia	9	VIRGINIA				
Rabies (in animals)	1	Smallpox—Scott County	15			
Scarlet fever	16	WASHINGTON				
Smallpox	1	Cerebrospinal meningitis:				
Trachoma	3	Asotin County	1			
Tuberculosis	24	Bellingham	1			
Whooping cough	20	Chelan County	1			
NEW YORK (Exclusive of New York City)						
Chicken pox	349	Clarke County	1			
Diphtheria	83	Seattle	1			
German measles	286	Chicken pox	107			
Lethargic encephalitis	1	Diphtheria	14			
Measles	743	German measles	373			
Mumps	387	Measles	431			
Pneumonia	278	Mumps	109			
Poliomyelitis	1	Pneumonia	5			
Scarlet fever	265	Poliomyelitis	1			
Septic sore throat	3	Scarlet fever	64			
Smallpox	7	Smallpox	33			
Typhoid fever	7	Tuberculosis	15			
Vincent's angina	22	Typhoid fever	10			
Whooping cough	179	Whooping cough	37			
NORTH CAROLINA						
Chicken pox	118	WEST VIRGINIA				
Diphtheria	23	Chicken pox	55			
German measles	12	Diphtheria	17			
Measles	920	Influenza	47			
Ophthalmia neonatorum	1	Measles	151			
Scarlet fever	14	Scarlet fever	53			
Smallpox	33	Smallpox	49			
Typhoid fever	1	Tuberculosis	21			
Whooping cough	788	Typhoid fever	4			
*						
Deaths.						

April 22, 1927

Reports for Week Ended April 9, 1927

DISTRICT OF COLUMBIA		Cases	NORTH DAKOTA—continued		Cases
Chicken pox	34		German measles	2	
Diphtheria	19		Measles	145	
Influenza	2		Mumps	3	
Measles	5		Pneumonia	7	
Pneumonia	23		Poliomyelitis	2	
Scarlet fever	29		Scarlet fever	72	
Tuberculosis	22		Smallpox	7	
Whooping cough	14		Tuberculosis	3	
NORTH DAKOTA			Typhoid fever	2	
Chicken pox	21		Whooping cough	4	
Diphtheria	2				

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Cerebro-spinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
<i>March, 1927</i>										
District of Columbia	0	117	48		22		0	111	0	6
Massachusetts	6	428	80		1,297	1	3	2,517	0	44
Vermont	0	8			528		0	60	0	

March, 1927		Cases	March, 1927—Continued		Cases
Chicken pox:			Rabies in animals:		
District of Columbia		313	District of Columbia		2
Massachusetts		1,167	Vermont		4
Vermont		117	Septic sore throat:		
German measles:			Massachusetts		10
Massachusetts		68	Tetanus:		
Vermont		60	Massachusetts		1
Lead poisoning:			Trachoma:		
Massachusetts		7	Massachusetts		3
Lethargic encephalitis:			Whooping cough:		
Massachusetts		15	District of Columbia		71
Mumps:			Massachusetts		760
Massachusetts		2,027	Vermont		96
Vermont		317			
Ophthalmia neonatorum:					
Massachusetts		220			

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 98 cities reporting cases used in the following table are situated in all parts of the country, and have an estimated aggregate population of more than 30,600,000. The estimated population of the 93 cities reporting deaths is more than 30,000,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended April 2, 1927, and April 3, 1926

		1927	1926	Estimated expectancy
<i>Cases reported</i>				
Diphtheria:				
42 States		1,801	1,281	—
98 cities		1,129	753	895
Measles:				
41 States		16,149	19,861	—
98 cities		4,620	9,862	—
Poliomyelitis:				
42 States		11	15	—
Scarlet fever:				
41 States		6,140	4,307	—
98 cities		2,596	1,717	1,260
Smallpox:				
42 States		1,094	865	—
98 cities		165	243	140
Typhoid fever:				
41 States		217	165	—
98 cities		47	58	43
<i>Deaths reported</i>				
Influenza and pneumonia:				
98 cities		1,071	2,406	—
Smallpox:				
98 cities		0	10	—
Los Angeles		0	10	—

City reports for week ended April 2, 1927

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1918 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1925, estimated	Chick- en pox, cases re- ported	Diphtheria		Influenza		Meas- les, cases re- ported	Mump- s, cases re- ported	Pneu- monia, deaths re- ported
			Cases, es- timated expectancy	Cases re- ported	Cases re- ported	Deaths re- ported			
NEW ENGLAND									
Maine:									
Portland	75,333	5	1	0	0	0	0	1	1
New Hampshire:									
Concord	22,546	0	0	0	0	0	6	0	1
Manchester	83,097	0	2	0	0	0	0	0	3
Vermont:									
Barre	10,008	0	0	0	0	0	0	3	1
Burlington	24,080	0	0	2	0	0	6	1	1
Massachusetts:									
Boston	770,620	55	57	25	8	2	71	104	32
Fall River	128,903	4	3	4	0	0	1	4	2
Springfield	142,005	5	3	6	0	1	1	4	0
Worcester	190,757	12	5	3	0	0	0	20	5
Rhode Island:									
Pawtucket	69,760	7	1	1	0	0	1	0	1
Providence	207,918	0	8	10	0	1	1	0	5
Connecticut:									
Bridgeport	(1)	0	6	8	0	1	6	5	5
Hartford	160,197	0	7	2	0	0	0	3	5
New Haven	178,927	14	3	0	0	0	1	5	9

¹ No estimate made.

City reports for week ended April 2, 1927—Continued

Division, State, and city	Population July 1, 1925, estimated	Chick-en pox, cases reported	Diphtheria		Influenza		Meas- sles, cases reported	Mumps, cases reported	Pneu- monia, deaths reported
			Cases estimated expectancy	Cases reported	Cases reported	Deaths reported			
MIDDLE ATLANTIC									
New York:									
Buffalo	638,016	16	10	8	2	10	11	17	
New York	5,873,356	305	214	423	51	20	42	496	226
Rochester	316,786	6	10	13	—	2	9	1	14
Syracuse	182,003	9	6	5	—	0	75	8	3
New Jersey:									
Camden	128,642	6	4	9	2	1	0	0	2
Newark	452,513	83	17	4	8	0	2	70	16
Trenton	132,020	6	4	3	3	0	0	1	2
Pennsylvania:									
Philadelphia	1,979,364	115	73	55	—	14	26	188	67
Pittsburgh	631,563	55	18	15	—	3	90	8	27
Reading	112,707	9	3	0	—	0	4	46	3
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	403,333	14	8	8	0	3	2	12	13
Cleveland	936,485	102	23	41	7	3	5	41	19
Columbus	279,836	11	3	3	0	1	2	0	9
Toledo	287,380	25	4	2	1	0	21	11	7
Indiana:									
Fort Wayne	97,846	8	2	1	33	0	0	0	3
Indianapolis	358,819	69	7	5	0	2	15	20	11
South Bend	80,091	0	1	0	0	0	19	0	3
Terre Haute	71,071	2	1	0	0	0	17	0	4
Illinois:									
Chicago	2,995,230	93	80	91	23	7	1,037	193	86
Peoria	81,564	6	1	0	0	0	6	5	6
Springfield	63,923	10	1	2	0	0	31	0	3
Michigan:									
Detroit	1,245,824	83	51	72	3	4	30	161	39
Flint	130,316	24	4	1	0	1	8	2	10
Grand Rapids	153,698	4	3	1	0	0	1	1	1
Wisconsin:									
Kenosha	50,891	5	1	0	1	1	72	41	0
Madison	46,385	—	1	—	—	—	—	—	—
Milwaukee	500,192	105	15	12	0	0	129	105	18
Racine	67,707	7	2	1	0	0	17	39	0
Superior	39,671	0	0	0	0	0	2	0	1
WEST NORTH CENTRAL									
Minnesota:									
Duluth	110,502	10	1	0	0	0	39	0	0
Minneapolis	425,435	76	15	22	0	0	7	3	13
St. Paul	246,001	29	15	3	0	1	14	2	13
Iowa:									
Davenport	52,460	0	0	0	0	—	3	7	—
Sioux City	76,411	10	1	1	0	—	66	7	—
Waterloo	36,771	4	0	1	0	—	86	0	—
Missouri:									
Kansas City	367,481	28	6	3	0	1	72	1	14
St. Joseph	78,342	3	1	0	0	0	31	0	2
St. Louis	821,543	29	37	45	0	0	47	56	—
North Dakota:									
Fargo	26,403	12	1	0	0	0	171	16	0
Grand Forks	14,811	0	0	0	0	—	0	0	—
South Dakota:									
Aberdeen	15,036	3	0	0	0	—	126	0	—
Sioux Falls	30,127	0	0	0	0	—	9	0	—
Nebraska:									
Lincoln	60,941	4	1	1	0	0	80	15	0
Omaha	211,768	10	3	3	0	0	120	28	1
Kansas:									
Topeka	55,411	11	1	1	0	0	97	2	2
	88,367	15	1	1	0	0	35	0	0

City reports for week ended April 9, 1927—Continued

Division, State, and city	Population July 1, 1925, estimated	Chick-en pox, cases reported	Diphtheria		Influenza		Meas- sles, cases reported	Mumps, cases reported	Pneu- monia, deaths re- ported
			Cases, esti- mated expectancy	Cases re- ported	Cases re- ported	Deaths re- ported			
SOUTH ATLANTIC									
Delaware:									
Wilmington.....	122,049	2	2	1	0	0	0	0	4
Maryland:									
Baltimore.....	706,296	117	26	58	60	9	5	9	36
Cumberland.....	33,741	0	1	0	1	0	2	0	4
Frederick.....	12,035	0	0	0	0	0	0	0	1
District of Columbia:									
Washington.....	407,906	70	10	13	1	3	4	0	15
Virginia:									
Lynchburg.....	30,395	19	0	2	0	0	34	0	6
Norfolk..... ⁽¹⁾		0							
Richmond.....	186,403	2	2	4	0	2	164	15	7
Roanoke.....	58,208	2	0	0	0	1	6	0	5
West Virginia:									
Charleston.....	49,019	6	0	4	1	0	1	0	0
Wheeling.....	56,268	3	1	1	0	0	17	0	5
North Carolina:									
Raleigh.....	30,371	0	0	0	0	0	12	0	4
Wilmington.....	37,061	0	0	0	0	1	1	13	3
Winston-Salem.....	69,031	12	0	0	0	3	4	24	5
South Carolina:									
Charleston.....	73,125	1	0	0	56	0	27	1	3
Columbia.....	41,225	0							
Greenville.....	27,311	0	0	0	0	0	0	0	2
Georgia:									
Atlanta..... ⁽¹⁾	5	2	0	27	1	36	8	8	11
Brunswick.....	16,809	1	0	0	0	2	15	0	
Savannah.....	93,134	1	1	0	45	0	3	0	4
Florida:									
Miami.....	69,754	21	3	4	0	0	8	8	1
St. Petersburg.....	26,847	0							0
Tampa.....	94,743	3	1	2	0	0	132	0	3
EAST SOUTH CENTRAL									
Kentucky:									
Covington.....	58,369	0	0	1	0	0	0	0	2
Louisville.....	305,935	9	5	2	3	0	1	1	5
Tennessee:									
Memphis.....	174,533	14	5	0		11	1	0	7
Nashville.....	136,220	5	0	1		4	0	1	4
Alabama:									
Birmingham.....	205,670	2	2	7	46	4	20	3	7
Mobile.....	65,955	0	0	0	0	1	16	0	0
Montgomery.....	46,481	28	0	1	2	0	18	0	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith.....	31,643	3	0	0	0		70	6	1
Little Rock.....	74,216	10	1	1	1	2	9	0	2
Louisiana:									
New Orleans.....	414,493	0	7	24	1	2	43	0	20
Shreveport.....	57,857	3	0	0	0	0	7	13	1
Oklahoma:									
Oklahoma City..... ⁽¹⁾			1			0			6
Texas:									
Dallas.....	104,420	15	4	4	1	1	96	3	5
Galveston.....	46,375	0	0	0	0	0	0	0	1
Houston.....	164,954	4	2	9	0	0	1	0	2
San Antonio.....	198,069	1	1	5	0	2	0	0	6
MOUNTAIN									
Montana:									
Billings.....	17,971	3	0	0	0	1	1	0	1
Great Falls.....	26,883	8	0	0	0	0	5	0	3
Helena.....	12,037	1	0	0	0	0	0	0	0
Missoula.....	32,668	0	0	0	0	0	0	14	1
Idaho:									
Boise.....	23,042	0	0	2	0	0	4	0	0

¹ No estimate made.

City reports for week ended April 2, 1927—Continued

Division, State, and city	Population July 1, 1925, estimated	Chick-en pox, cases re-por-ted	Diphtheria		Influenza		Meas-les, cases re-por-ted	Mumps, cases re-por-ted	Pneu-monia, deaths re-por-ted
			Cases, esti-mated expect-ancy	Cases re-por-ted	Cases re-por-ted	Deaths re-por-ted			
Colorado:									
Denver	280,911	13	9	5	2	326	6	8	
Pueblo	43,787	16	1	1	0	31	2	1	
New Mexico:									
Albuquerque	21,000	0	1	0	0	7	33	0	
Utah:									
Salt Lake City	130,948	20	3	4	4	15	0	4	
Nevada:									
Reno	12,665	0	0	0	0	2	2	0	
PACIFIC									
Washington:									
Seattle	(1)	61	5	8	0	41	76	-----	
Spokane	108,897	6	2	0	0	16	0	-----	
Tacoma	104,455	32	1	2	0	44	0	4	
Oregon:									
Portland	282,383	7	6	5	1	140	8	1	
California:									
Los Angeles	(1)	46	42	45	39	3	804	14	25
Sacramento	72,260	0	1	2	2	2	15	13	3
San Francisco	557,530	56	21	8	9	2	137	106	5

Division, State, and city	Scarlet fever		Smallpox			Tuber-cu-losis, deaths re-por-ted	Typhoid fever			Whoop-ing cough, cases re-por-ted	Deaths, all causes
	Cases, esti-mated expect-ancy	Cases re-por-ted	Cases, esti-mated expect-ancy	Cases re-por-ted	Deaths re-por-ted		Cases, esti-mated expect-ancy	Cases re-por-ted	Deaths re-por-ted		
NEW ENGLAND											
Maine:											
Portland	4	1	0	1	0	1	0	0	0	4	18
New Hampshire:											
Concord	0	6	0	0	0	0	0	0	0	0	7
Manchester	3	0	0	0	0	0	0	0	0	0	19
Vermont:											
Burlington	0	0	0	0	0	1	0	1	1	0	5
Burlington	1	7	0	0	0	0	0	0	0	1	7
Massachusetts:											
Boston	72	151	0	0	0	17	1	3	0	10	236
Fall River	4	6	0	0	0	2	0	1	0	0	23
Springfield	5	6	0	0	0	1	0	0	0	9	41
Worcester	9	7	0	0	0	3	0	0	0	6	45
Rhode Island:											
Pawtucket	2	1	0	0	0	0	0	0	0	2	24
Providence	8	14	0	0	0	4	0	0	0	0	74
Connecticut:											
Bridgeport	11	14	0	0	0	2	0	0	0	0	31
Hartford	5	11	0	0	0	0	0	0	0	3	19
New Haven	11	4	0	0	0	1	1	0	0	1	54
MIDDLE ATLANTIC											
New York:											
Buffalo	21	20	0	0	0	3	0	0	0	21	140
New York	264	940	1	1	0	114	8	12	0	107	1,535
Rochester	16	18	0	0	0	2	0	0	0	6	86
Syracuse	13	8	0	0	0	0	0	0	0	2	45
New Jersey:											
Camden	5	9	1	0	0	0	1	0	0	1	34
Newark	26	50	0	0	0	9	0	0	0	23	136
Trenton	4	2	0	0	0	2	1	0	0	3	38
Pennsylvania:											
Philadelphia	80	157	0	0	0	42	3	0	1	35	564
Pittsburgh	29	17	1	0	0	11	1	0	0	7	200
Reading	4	5	0	0	0	3	0	0	0	3	24

¹ No estimate made.² Pulmonary tuberculosis only.

City reports for week ended April 8, 1927—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber-cu-losis, deaths re-ported	Typhoid fever			Whoop-ing cough, cases re-ported	Deaths, all causes
	Cases, es-ti-mated ex-pect-ancy	Cases re-ported	Cases, es-ti-mated ex-pect-ancy	Cases re-ported	Deaths re-ported		Cases, es-ti-mated ex-pect-ancy	Cases re-ported	Deaths re-ported		
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	16	45	2	1	0	12	0	0	0	0	141
Cleveland	37	34	1	0	0	23	1	0	0	23	208
Columbus	13	8	2	1	0	7	0	0	0	5	67
Toledo	15	10	4	0	0	10	1	0	0	19	85
Indiana:											
Fort Wayne	5	12	2	5	0	1	0	0	0	1	23
Indianapolis	10	16	9	39	0	7	1	0	0	24	89
South Bend	3	4	1	2	0	2	0	0	0	0	23
Terre Haute	2	3	1	0	0	0	0	0	0	5	17
Illinois:											
Chicago	119	141	3	0	0	43	2	1	0	62	779
Peoria	3	0	1	0	0	0	0	0	0	7	24
Springfield	2	6	1	0	0	0	0	0	0	0	17
Michigan:											
Detroit	88	100	2	1	0	17	1	0	0	59	304
Flint	6	32	1	1	0	2	0	0	0	3	41
Grand Rapids	8	15	1	0	0	3	0	0	0	3	33
Wisconsin:											
Kenosha	3	14	0	0	0	1	0	0	0	3	8
Madison	4	0	0	0	0	0	0	0	0	0	
Milwaukee	27	44	3	0	0	0	0	0	0	38	128
Racine	4	5	0	0	0	1	0	0	0	3	18
Superior	3	6	3	0	0	0	0	0	0	0	9
WEST NORTH CENTRAL											
Minnesota:											
Duluth	8	8	1	0	0	4	0	0	0	0	15
Minneapolis	30	77	7	0	0	9	1	0	0	0	103
St. Paul	33	43	6	0	0	12	1	0	0	3	80
Iowa:											
Davenport	2	4	2	0	0	0	0	0	0	0	
Sioux City	2	5	1	2	0	0	0	0	0	3	
Waterloo	2	2	0	0	0	0	0	0	0	1	
Missouri:											
Kansas City	11	17	2	7	0	11	0	1	0	8	121
St. Joseph	2	13	0	1	0	1	0	0	0	1	18
St. Louis	34	46	4	1	0	12	2	0	0	32	225
North Dakota:											
Fargo	2	0	0	0	0	0	0	0	0	0	14
Grand Forks	1	8	0	0	0	0	0	1	0	0	
South Dakota:											
Aberdeen	3	1	0	0	0	0	0	0	0	0	
Sioux Falls	2	1	0	0	0	0	0	0	0	0	
Nebraska:											
Lincoln	3	3	1	1	0	0	0	0	0	5	16
Omaha	3	17	9	3	0	1	1	0	0	1	54
Kansas:											
Topeka	3	1	1	1	0	2	0	0	0	11	15
Wichita	2	7	3	0	0	4	0	0	0	5	31
SOUTH ATLANTIC											
Delaware:											
Wilmington	8	18	0	0	0	1	1	0	0	3	
Maryland:											
Baltimore	36	30	1	0	0	20	2	4	0	46	229
Cumberland	1	0	0	0	0	2	0	0	0	0	16
Frederick	1	0	0	0	0	0	0	0	0	0	3
District of Col.:											
Washington	25	31	2	0	0	13	1	2	0	11	151
Virginia:											
Lynchburg	1	0	0	0	0	0	0	0	0	0	15
Norfolk	1	0	0	0	0	0	0	0	0	0	
Richmond	2	4	0	0	0	3	0	0	0	3	47
Roanoke	1	3	1	8	0	2	0	0	0	2	22
West Virginia:											
Charleston	1	2	0	3	0	3	1	0	0	3	17
Wheeling	2	5	0	0	0	2	1	0	0	5	19
North Carolina:											
Raleigh	1	1	0	0	0	0	0	0	0	30	10
Wilmington	0	0	0	0	0	1	0	0	0	19	12
Winston-Salem	0	2	5	1	0	1	0	0	0	57	26

City reports for week ended April 2, 1927—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber-cu-losis, deaths re-ported	Typhoid fever			Whoop-ing cough, cases re-ported	Deaths, all causes
	Cases, es-ti-mated ex-pectancy	Cases re-ported	Cases, es-ti-mated ex-pectancy	Cases re-ported	Deaths re-ported		Cases, es-ti-mated ex-pectancy	Cases re-ported	Deaths re-ported		
SOUTH ATLANTIC—continued											
South Carolina:											
Charleston	0	0	0	0	0	4	0	2	0	0	30
Columbia	0	0	1	0	0	0	0	0	0	0	6
Greenville	0	0	2	0	0	1	0	0	0	0	0
Georgia:											
Atlanta	4	6	3	14	0	6	0	0	1	5	70
Brunswick	0	0	0	0	0	0	0	0	0	0	3
Savannah	0	0	0	3	0	2	1	0	0	1	26
Florida:											
Miami	2	1	0	0	0	3	1	0	0	0	16
St. Petersburg	1	1	1	0	0	0	0	0	0	0	20
Tampa	0	1	0	3	0	2	1	1	0	0	26
EAST SOUTH CENTRAL											
Kentucky:											
Covington	2	1	0	0	0	1	1	0	0	0	17
Louisville	5	2	1	2	0	8	1	2	0	0	68
Tennessee:											
Memphis	4	21	4	13	0	7	0	0	0	32	76
Nashville	2	5	2	0	0	2	0	1	0	0	48
Alabama:											
Birmingham	1	5	9	6	0	6	1	0	1	15	60
Mobile	0	0	1	0	0	0	0	1	0	0	18
Montgomery	0	0	1	3	0	0	0	0	0	0	9
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	1	0	0	0	0	0	0	0	1	16	13
Little Rock	1	1	1	1	0	4	0	0	0	0	0
Louisiana:											
New Orleans	6	3	3	1	0	14	2	5	2	6	153
Shreveport	0	0	1	0	0	3	0	0	0	1	21
Oklahoma:											
Oklahoma City	2	—	3	—	0	1	0	0	0	—	32
Texas:											
Dallas	2	4	4	11	0	3	0	0	0	0	47
Galveston	1	0	0	0	0	2	0	0	0	0	16
Houston	1	3	1	2	0	4	0	1	0	2	77
San Antonio	1	2	0	0	0	3	0	0	0	1	55
MOUNTAIN											
Montana:											
Billings	1	2	0	0	0	0	0	0	0	0	2
Great Falls	1	7	1	1	0	1	0	0	0	0	9
Helena	1	0	0	0	0	0	0	0	0	0	4
Missoula	0	8	1	0	0	0	0	0	0	0	5
Idaho:											
Boise	1	3	1	0	0	0	0	0	0	0	7
Colorado:											
Denver	13	84	3	0	0	6	0	0	0	1	75
Pueblo	1	12	0	0	0	0	0	0	0	0	10
New Mexico:											
Albuquerque	0	0	0	0	0	7	0	0	0	0	12
Utah:											
Salt Lake City	2	17	1	0	0	0	0	0	0	0	22
Nevada:											
Reno	1	2	1	0	0	0	0	0	0	0	2
PACIFIC											
Washington:											
Seattle	9	16	3	0	0	0	0	2	—	41	—
Spokane	5	27	5	6	—	—	0	0	0	6	—
Tacoma	2	5	3	19	0	1	0	3	0	3	20
Oregon:											
Portland	7	8	6	1	0	3	0	0	0	6	76
California:											
Los Angeles	24	42	5	0	0	33	1	2	0	26	243
Sacramento	2	0	1	0	0	2	1	1	0	2	22
San Francisco	15	40	4	1	0	13	2	1	0	32	158

City reports for week ended April 2, 1927—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Vermont:									
Burlington	0	0	0	0	0	1	0	0	0
Massachusetts:									
Boston	0	1	0	0	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
Buffalo	0	1	0	0	0	0	0	0	0
New York	6	2	6	2	0	0	1	0	0
Pennsylvania:									
Pittsburgh	2	0	0	0	0	0	0	0	0
EAST NORTH CENTRAL									
Illinois:									
Chicago	1	3	1	0	0	0	1	0	0
Michigan:									
Detroit	3	1	2	0	0	0	0	0	0
Wisconsin:									
Milwaukee	8	2	0	0	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Minneapolis	1	0	0	0	0	0	0	0	0
St. Paul	1	0	0	0	0	0	0	0	0
Missouri:									
St. Louis	1	0	0	0	0	0	0	0	0
SOUTH ATLANTIC									
Maryland:									
Baltimore	0	1	0	0	1	0	0	0	0
South Carolina:									
Charleston	0	0	0	1	4	0	0	0	0
EAST SOUTH CENTRAL									
Tennessee:									
Memphis	0	1	0	0	0	0	0	0	0
Nashville	0	1	0	0	0	0	0	0	0
Alabama:									
Birmingham	0	0	0	0	1	1	0	0	0
Mobile	0	0	1	0	0	0	0	0	0
WEST SOUTH CENTRAL									
Louisiana:									
New Orleans	0	0	0	0	2	2	0	0	0
Shreveport	0	0	0	0	0	2	0	0	0
Texas:									
Dallas	0	0	0	0	3	2	0	0	0
Houston	0	0	0	0	0	2	0	0	0
San Antonio	0	0	0	1	0	0	0	0	0
MOUNTAIN									
Montana:									
Great Falls	0	1	0	0	0	0	0	0	0
Missoula	1	0	0	0	0	0	0	0	0
Colorado:									
Denver	2	1	0	0	0	0	0	0	0
Pueblo	2	0	0	0	0	0	0	0	0
PACIFIC									
Oregon:									
Portland	1	0	0	0	0	0	0	0	0
California:									
Los Angeles	0	1	0	0	0	0	0	0	0
Sacramento	1	0	0	0	0	0	0	0	0
San Francisco	4	1	2	1	0	0	0	1	0

¹ Rabies (human): 1 death at Toledo, Ohio.

The following table gives the rates per 100,000 population for 101 cities for the five-week period ended April 2, 1927, compared with those for a like period ended April 3, 1926. The population figures used in computing the rates are approximate estimates as of July 1,

1926 and 1927, respectively, authoritative figures for many of the cities not being available. The 101 cities reporting cases had estimated aggregate populations of approximately 30,440,000 in 1926 and 30,960,000 in 1927. The 95 cities reporting deaths had nearly 29,780,000 estimated population in 1926 and nearly 30,290,000 in 1927. The number of cities included in each group and the estimated aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, February 27 to April 2, 1927—Annual rates per 100,000 population, compared with rates for the corresponding period of 1926¹

DIPHTHERIA CASE RATES

	Week ended—									
	Mar. 6, 1926	Mar. 5, 1927	Mar. 13, 1926	Mar. 12, 1927	Mar. 20, 1926	Mar. 19, 1927	Mar. 27, 1926	Mar. 26, 1927	Apr. 3, 1926	Apr. 2, 1927
101 cities	² 124	182	³ 114	⁴ 184	120	⁴ 171	⁵ 131	⁴ 179	² 126	⁶ 102
New England	94	163	78	128	127	137	139	130	80	137
Middle Atlantic	111	224	113	231	126	225	142	227	146	264
East North Central	123	177	³ 107	³ 166	96	157	102	170	² 113	² 160
West North Central	² 241	115	216	133	147	127	149	121	159	159
South Atlantic	108	196	86	156	69	⁴ 149	⁵ 62	⁴ 151	95	⁴ 167
East South Central	47	82	26	112	26	31	36	41	57	61
West South Central	103	151	103	193	103	164	155	176	60	180
Mountain	73	234	109	198	73	126	235	81	146	108
Pacific	188	134	147	199	281	165	238	194	201	170

MEASLES CASE RATES

101 cities	² 1,884	858	¹ 1,686	⁴ 942	1,783	⁴ 906	⁴ 1,834	⁴ 920	² 1,693	⁶ 785
New England	2,441	172	1,964	197	1,722	211	1,344	197	1,460	204
Middle Atlantic	1,843	68	1,716	80	1,858	93	1,839	114	1,850	128
East North Central	2,695	1,078	² 1,135	¹ 1,104	1,904	1,160	2,091	1,092	² 1,504	² 884
West North Central	² 842	955	1,603	1,245	1,802	1,564	2,323	1,519	2,428	1,558
South Atlantic	2,675	797	2,248	786	2,772	⁴ 942	² 2,731	⁴ 828	2,649	⁴ 883
East South Central	1,319	540	1,407	459	2,260	443	2,906	438	2,875	285
West South Central	17	730	39	1,204	43	1,040	125	1,778	43	948
Mountain	210	8,154	337	9,116	328	5,412	310	5,088	911	5,452
Pacific	276	3,037	324	3,259	319	2,930	460	3,170	246	2,767

SCARLET FEVER CASE RATES

101 cities	² 289	419	³ 303	⁴ 446	300	⁴ 436	⁵ 324	⁴ 427	² 296	⁶ 441
New England	347	423	333	590	403	546	354	478	391	513
Middle Atlantic	185	533	192	585	202	573	210	581	210	614
East North Central	346	398	³ 371	³ 364	340	359	407	351	² 331	² 323
West North Central	² 807	445	903	472	815	427	897	401	789	469
South Atlantic	162	181	149	194	156	⁴ 234	² 155	⁴ 188	173	² 202
East South Central	186	219	140	280	145	209	140	163	217	173
West South Central	90	67	112	122	137	63	146	59	86	55
Mountain	337	1,079	219	1,115	246	1,340	210	1,133	146	1,214
Pacific	311	330	249	285	279	254	287	361	249	340

SMALLPOX CASE RATES

101 cities	² 50	22	³ 40	² 30	38	⁴ 31	⁵ 37	⁴ 30	² 42	⁶ 28
New England	0	0	0	0	0	0	0	0	0	2
Middle Atlantic	0	0	0	0	0	1	0	0	0	0
East North Central	23	21	³ 19	³ 34	26	35	10	29	² 17	² 34
West North Central	² 61	54	67	54	50	50	54	69	46	30
South Atlantic	99	53	48	64	60	⁴ 53	⁵ 95	⁴ 39	41	⁴ 63
East South Central	67	122	67	82	83	132	57	107	98	122
West South Central	193	50	142	71	137	46	142	75	90	63
Mountain	36	0	18	0	64	90	27	18	55	9
Pacific	300	13	260	94	163	84	200	99	346	63

¹ The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1926 and 1927, respectively.

² Kansas City, Mo., not included.

³ Madison, Wis., not included.

⁴ Norfolk, Va., and Columbia, S. C., not included.

⁵ Norfolk, Va., not included.

⁶ Madison, Wis., Norfolk, Va., and Columbia, S. C., not included.

Summary of weekly reports from cities, February 27 to April 2, 1927—Annual rate per 100,000 population, compared with rates for the corresponding period of 1926—Continued

TYPHOID FEVER CASE RATES

	Week ended—									
	Mar. 6, 1926	Mar. 5, 1927	Mar. 13, 1926	Mar. 12, 1927	Mar. 20, 1926	Mar. 19, 1927	Mar. 27, 1926	Mar. 26, 1927	Apr. 3, 1926	Apr. 2, 1927
101 cities.....	10	9	8	8	6	7	8	8	10	8
New England.....	12	2	5	12	0	5	0	5	7	12
Middle Atlantic.....	4	5	7	8	4	6	10	7	8	6
East North Central.....	5	6	14	11	3	4	4	4	3	11
West North Central.....	10	10	4	4	2	0	2	4	8	2
South Atlantic.....	6	24	7	11	20	12	16	14	17	18
East South Central.....	10	41	5	31	21	20	16	41	31	20
West South Central.....	39	8	4	17	9	13	9	29	34	25
Mountain.....	146	9	146	0	9	9	27	0	36	0
Pacific.....	16	8	0	10	5	18	13	10	11	24

INFLUENZA DEATH RATES

95 cities	1951	25	1971	27	76	1931	1967	27	1989	1922
New England	12	9	24	12	45	19	68	7	108	12
Middle Atlantic	68	24	105	25	95	32	112	26	100	21
East North Central	14	23	32	16	65	18	104	16	110	14
West North Central	5	17	36	15	32	21	38	15	38	4
South Atlantic	47	45	78	72	51	82	83	67	59	39
East South Central	259	20	197	76	222	87	253	92	96	102
West South Central	124	39	97	47	146	22	115	26	102	30
Mountain	100	54	146	54	46	18	64	27	27	27
Pacific	32	17	21	7	18	14	14	28	21	24

PNEUMONIA DEATH RATES

95 cities.	269	172	326	188	372	183	372	166	335	164
New England	186	202	217	188	356	172	429	156	467	156
Middle Atlantic	358	193	461	223	504	226	494	199	433	186
East North Central	206	134	289	159	355	142	352	141	322	148
West North Central	197	104	148	81	146	114	160	102	160	93
South Atlantic	342	234	303	278	352	263	333	220	291	232
East South Central	310	260	358	178	395	183	476	188	357	127
West South Central	362	185	238	159	260	190	163	116	185	159
Mountain	237	126	301	171	201	162	191	171	155	162
Pacific	117	121	92	148	99	93	117	110	57	128

² Kansas City, Mo., not included.
³ Madison, Wis., not included.

⁸ Madison, Wis., not included.
⁹ Norfolk, Va., and Columbia,

• Norfolk, Va., and Columbia, S. C., not included.
• Norfolk, Va., not included.

* Madison, Wis., Norfolk, Va., not included.

* MADISON, W. I., NORFOLK, VA., AND COLUMBIA, S. C., NOT INCLUDED.

Number of cities included in summary of weekly reports, and aggregate population of cities in each group, approximated as of July 1, 1926 and 1927, respectively

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases		Aggregate population of cities reporting deaths	
			1926	1927	1926	1927
Total	101	95	30,438,500	30,960,600	29,778,400	30,289,800
New England	12	12	2,211,000	2,245,900	2,211,000	2,245,900
Middle Atlantic	10	10	10,457,000	10,567,000	10,457,000	10,567,000
East North Central	16	16	7,644,900	7,804,500	7,644,900	7,804,500
West North Central	12	10	2,585,500	2,626,600	2,470,600	2,510,900
South Atlantic	21	20	2,749,500	2,878,100	2,757,700	2,835,700
East South Central	7	7	1,008,300	1,023,500	1,008,300	1,023,500
West South Central	8	7	1,213,800	1,243,300	1,181,500	1,210,400
Mountain	9	9	572,100	580,000	572,100	580,000
Pacific	6	4	1,946,400	1,991,700	1,475,300	1,512,800

FOREIGN AND INSULAR

THE FAR EAST

Report for week ended March 19, 1927.—The following report for the week ended March 19, 1927, was transmitted by the far eastern bureau of the health section of the secretariat of the League of Nations, located at Singapore, to the headquarters at Geneva:

Maritime towns	Plague		Cholera		Smallpox	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Arabia: Aden.....	0	0	0	0	13	—
Ceylon: Colombo.....	8	5	0	0	0	0
British India:						
Bombay.....	2	—	—	0	65	23
Calcutta.....	0	—	52	278	232	—
Rangoon.....	3	—	3	29	—	9
Madras.....	0	—	1	29	—	1
Negapatam.....	0	—	1	2	—	1
Vizagapatam.....	0	—	0	1	—	1
Siam: Bangkok.....	0	0	22	14	12	3
Straits Settlements: Singapore.....	0	0	0	0	1	1
Dutch East Indies:						
Surabaya.....	1	1	—	0	0	0
Padang.....	0	0	0	0	1	0
French Indo-China: Saigon.....	1	1	1	1	0	0
Hongkong.....	0	0	0	0	13	3
U. S. S. R.: Vladivostok.....	0	0	0	0	2	0
Kwantung:						
Dairen.....	0	0	0	0	1	1
Port Arthur.....	0	0	0	0	1	0
Chosen: Fusun.....	0	0	0	0	1	0
Japan: Kobe.....	0	0	0	0	1	0
Egypt: Port Said.....	1	1	0	0	0	0
Kenya: Mombasa.....	0	0	0	0	0	0

Telegraphic reports from the following maritime towns indicated that no case of plague, cholera, or smallpox was reported during the week:

ASIA

Arabia.—Jeddah, Perim, Kamaran.
 Iraq.—Basrah.
 Persia.—Mohammerah, Bender-Abbas, Bushire, Lingah.
 British India.—Chittagong, Cochin, Karachi, Tuticorin.
 Portuguese India.—Nova Goa.
 Federated Malay States.—Port Swettenham.
 Straits Settlements.—Penang.
 Dutch East Indies.—Batavia, Sabang, Belawan-Dell, Pontianak, Semarang, Menado, Banjermasin, Cheribon, Palembang, Makassar, Samarinda.
 Sarawak.—Kuching.

British North Borneo.—Sandakan, Jesselton, Kudat, Tawao.
 Portuguese Timor.—Dilly.
 French Indo-China.—Haliphong, Tourane.
 Philippine Islands.—Manila, Iloilo, Jolo, Cebu, Zamboanga.
 China.—Amoy, Shanghai.
 Macao.
 Formosa.—Keelung, Takao.
 Chosen.—Chemulpo.
 Manchuria.—Harbin, Antung, Yingkow, Mukden, Changchun.
 Japan.—Yokohoma, Nagasaki, Niigata, Hakodate, Shimonoseki, Moji, Tsuruga, Osaka.

AUSTRALASIA AND OCEANIA

Australia.—Adelaide, Melbourne, Sydney, Brisbane, Rockhampton, Townsville, Port Darwin, Broome, Fremantle, Carnarvon, Thursday Island, Cairns.

New Guinea.—Port Moresby.

New Britain Mandated Territory.—Rabaul and Kokopo.

New Zealand.—Auckland, Wellington, Christchurch, Invercargill, Dunedin.

Samoa.—Apia.

New Caledonia.—Noumea.

Fiji.—Suva.

Hawaii.—Honolulu.

Society Islands.—Papeete.

AFRICA

Egypt.—Suez, Alexandria.

Anglo-Egyptian Sudan.—Port Sudan, Suakin.

Eritrea.—Massaua.

French Somaliland.—Djibouti.

British Somaliland.—Bzabera.

Italian Somaliland.—Mogadiscio.

Zanzibar.—Zanzibar.

Tanganyika.—Dar-es-Salaam.

Seychelles.—Victoria.

Portuguese East Africa.—Mosambique, Beira, Lourenco Marques.

Union of South Africa.—East London, Port Elizabeth, Cape Town, Durban.

Reunion.—St. Denis.

Mauritius.—Port Louis.

Madagascar.—Majunga, Tamatave.

Reports had not been received in time for publication from:

Dutch East Indies.—Tarakan, Balikpapan.

Belated information:

Week ending March 12: Two plague cases and two deaths were reported from Probolinggo (Dutch East Indies).

INFLUENZA ON VESSEL

Steamship "Benalla".—At *Cape Town, Union of South Africa*, from *Liverpool*—February 25, 1927.—The steamship *Benalla* arrived at Cape Town from Liverpool, February 25, 1927, with history of 50 cases of mild influenza and 2 cases of pneumonia during the voyage. The *Benalla* sailed for Fremantle February 26, 1927.

PLAQUE ON VESSEL

Steamship "Leconte de Lisle".—At *Tamatave from Mauritius*—February, 1927.—The steamship *Leconte de Lisle* left Port Louis, Mauritius, February 18, 1927, touched at Réunion, and arrived February 20, 1927, at Tamatave, Madagascar, where on February 21 it landed a case of plague in a native workman and on February 23 a second case in a young European. Antiplague inoculation was administered to the entire crew by the ship's doctor. The vessel operated in quarantine at ports in Madagascar and at Dar es Salaam, Zanzibar, and Mombasa, was admitted to free pratique at Aden and quarantined at Djibouti. The *Leconte de Lisle* arrived at Suez March 17, 1927, with destination for Marseille. No plague rats were found on board.

CANADA

Communicable diseases.—Week ended April 2, 1927.—The Canadian Ministry of Health reports cases of certain communicable diseases from seven provinces of Canada for the week ended April 2, 1927, as follows:

Disease	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	Total
Cerebrospinal fever				2				2
Influenza	13			7			12	20
Smallpox				10				22
Typhoid fever		721		5	3			729

Communicable diseases—Ontario—March, 1927—Comparative.—During the month of March, 1927, communicable diseases were reported in the Province of Ontario, Canada, as follows:

Disease	March, 1927		March, 1926	
	Cases	Deaths	Cases	Deaths
Cerebrospinal meningitis.....	4	—	—	7
Chancroid.....	2	—	—	—
Chicken pox.....	568	—	640	—
Diphtheria.....	244	16	155	9
German measles.....	882	—	943	—
Gonorrhea.....	144	—	132	—
Influenza.....	20	24	—	144
Lethargic encephalitis.....	—	—	1	1
Measles.....	1,718	—	2,661	5
Mumps.....	151	—	415	—
Pneumonia.....	—	187	—	237
Scarlet fever.....	815	4	632	12
Septic sore throat.....	3	—	2	—
Smallpox.....	47	—	45	1
Syphilis.....	103	—	106	—
Tuberculosis.....	116	62	144	88
Typhoid fever.....	11	6	33	1
Whooping cough.....	227	2	310	7

Smallpox.—Smallpox was reported present during the month of March, 1927, in 19 localities of the Province of Ontario, the greatest number of cases being reported from Toronto, viz, 12. In 10 localities one case each was reported.

Typhoid fever—Montreal and vicinity—March 4 to April 12, 1927.—The following table shows the cases of typhoid fever reported in Montreal, Canada, and adjacent municipalities from March 4 to April 12, 1927, inclusive:

City	Week ended—						Total to Apr. 9	Total to Apr. 12
	Mar. 5	Mar. 12	Mar. 19	Mar. 26	Apr. 2	Apr. 9		
Montreal.....	5	128	422	568	631	392	2,146	2,285
Lachine.....	—	1	—	—	1	—	2	3
Outremont.....	10	—	13	9	11	—	43	44
Verdun.....	10	—	25	30	44	18	127	128
Westmount.....	—	1	—	—	—	14	15	18
Total.....	5	180	460	607	687	424	2,333	2,478

CHILE

Typhoid fever—Typhus fever—September 15—November 15, 1926.—During the period September 15 to November 15, 1926, 46 cases of typhoid fever, with three deaths, viz, Santiago 1, Vina del Mar 2, were reported in Chile. During the same period 39 cases of typhus fever were reported, with 4 deaths, of which 2 deaths occurred at Lebu, capital of the Province of Arauco, and 2 at Santiago.

CUBA

Malaria—Typhoid fever—Santiago de Cuba.—Under date of April 2, 1927, 106 cases of malaria were reported in Santiago, exclusive of cases not medically attended. On the same date 17 cases of typhoid fever, with some fatalities from the disease, were reported.

CZECHOSLOVAKIA

Communicable diseases—January–February, 1927.—During the months of January and February, 1927, communicable diseases were reported in the Republic of Czechoslovakia as follows:

Disease	January		February	
	Cases	Deaths	Cases	Deaths
Anthrax	1		3	
Cerebrospinal meningitis	16	7	25	7
Diphtheria	639	57	566	61
Dysentery	39	12	9	1
Malaria	1		2	
Paratyphoid fever	2		2	1
Puerperal fever	55	23	57	17
Scarlet fever	1,233	20	906	23
Trachoma	169		171	
Typhoid fever	538	47	326	39
Typhus fever	25		23	

ESTONIA

Epidemic prevalence in Estonia—1924–1926.—A recent review of sanitary conditions in the Republic of Estonia shows that contagious disease prevalence was generally normal in Estonia with the exception of measles and scarlet fever. The last serious epidemic of measles was reported in 1922, with 2,811 cases, and of scarlet fever in 1920, with 2,549 cases. In 1926, scarlet fever was frequently accompanied by complications, the percentage of mortality among hospital cases being 2.3 per cent, and among privately treated cases, 6.8 per cent. The epidemic was at its height, with increased mortality, about December 25, and during the month of January, 1927, its return was general with the exception of the Island of Saaremaa (Ösel). In the rural districts the prevalence was not as widespread as in urban districts.

Influenza (grippe).—During the month of January renewed prevalence of influenza, or grippe, was noted. From January 23 to 29, 1927, 268 cases were reported; from that date to February 5, only 152 cases.

Prevalence of certain diseases in 1924, 1925, and 1926.—The following table shows the prevalence of certain diseases for the period 1924–1926, inclusive.

Morbidity from certain diseases for the years 1924, 1925, and 1926

Disease	1924	1925	1926
Diphtheria	461	545	447
Dysentery	125	38	9
Measles	203	82	4,602
Scarlet fever	451	775	3,212
Smallpox	4	5	5
Typhoid fever	957	250	523
Typhus fever	43	21	25

MADAGASCAR

Plague—January 16-31, 1927.—During the period January 16-31, 1927, 216 cases of plague, with 216 deaths, were reported in the Island of Madagascar. The distribution according to type was as follows: Bubonic, 99 cases; pneumonic, 63; septicemic, 54.

Plague declared epidemic—Measures to prevent spread.—Plague was officially declared epidemic February 7, 1927, in a defined region of the Province of Ambositra. This region borders on the Antisirabé district, where an outbreak had been in active progress during the preceding six weeks. The Government sanitary service was stated to have been very active in Antisirabé. Vaccinations were administered, and rat destruction was actively carried on. By February 9, 1927, 6,138 vaccinations had been administered.

PERU

Plague—February, 1927.—During the month of February, 1927, plague was reported in Peru, with 32 cases and 8 deaths, distributed in the four Departments of Lambayeque, Libertad, Lima, and Piura. The greatest prevalence was reported in the Department of Lima, viz, 20 cases, with 6 deaths, of which 10 cases, with 4 fatalities, occurred in the city of Lima and 2 cases on country estates in the vicinity.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given:

Reports Received During Week Ended April 22, 1927¹**CHOLERA**

Place	Date	Cases	Deaths	Remarks
India				
Calcutta	Feb. 27-Mar. 5	41	25	Jan. 29-Feb. 5, 1927: Cases, 4,890; deaths, 2,761.
Madras	Mar. 6-12	1	1	
Rangoon	do	5	4	
Siam				Feb. 20-26, 1927: Cases, 76; deaths, 57. Apr. 1, 1926-Feb. 26, 1927: Cases, 8,173; deaths, 5,402.
Bangkok	Feb. 20-26	13	8	District.
Straits Settlements:				
Singapore	Feb. 6-12	1		

¹ From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended April 22, 1927—Continued

PLAGUE

Place	Date	Cases	Deaths	Remarks
Brazil:				
Porto Alegre.....	Jan. 1-31.....	4	2	4 suspect plague rodents.
Ceylon:				
Colombo.....	Feb. 27-Mar. 5.....	3	2	Plague rodent, 1.
Egypt:				
Port Said.....	Mar. 16.....	1	1	
India.....				Jan. 29-Feb. 5, 1927: Cases, 2,998; deaths, 1,908.
Bombay.....	Feb. 27-Mar. 5.....	5	4	
Madras Presidency.....	Feb. 13-19.....	85	51	
Rangoon.....	Feb. 27-Mar. 5.....	4	5	
Madagascar:				
Antsirabe, town and district.....	Jan. 16-31.....	12	12	
Ambositra Province.....	do.....	23	23	
Diego-Suarez Province.....	do.....	3	3	
Itasy Province.....	do.....	21	21	
Moramanga Province.....	do.....	13	13	
Tananarive town.....	do.....	10	10	
Tananarive Province.....	do.....	134	134	
Peru.....				February, 1927; Cases, 32; deaths, 8.
Lambayeque—				
Province—				
Chiclayo.....	Feb. 1-28.....	4	1	One locality.
Lambayeque.....	do.....	2	1	Two localities.
Libertad—				
Province—				
Pacasmayo.....	do.....	2	—	One locality.
Trujillo.....	do.....	3	—	Do.
Lima—				
Province—				
Canete.....	do.....	5	2	Districts.
Chancay.....	do.....	3	—	At Huacho.
Lima.....	do.....	12	4	Lima City, cases, 10; deaths, 4; on country estates, cases, 2.
Piura—				
Province—				
Huancabamba.....	do.....	1	—	
Siam.....				Feb. 20-26, 1927: Case, 1; death, 1. Apr. 1, 1926-Feb. 26, 1927: Cases, 38; deaths, 29.
On vessel:				
S. S. Leconte de Lisle.....	Feb. 21-23.....	2	—	At Tamatave, Madagascar. One native, one European. Vessel left Port Louis, Mauritius, Feb. 18, 1927; arrived Tamatave Feb. 21. Operated in quarantine at ports in Madagascar and on mainland; received free pratique at Aden—quarantine at Djibuti. Arrived Mar. 17 Suez; destination Marseille.

SMALLPOX

Algeria:				
Algiers.....	Mar. 1-10.....	5	—	
Brazil:				
Rio de Janeiro.....	Feb. 20-Mar. 19.....	12	6	
British East Africa:				
Kenya—				
Nairobi.....	December, 1926—	15	5	Variola.
Canada:				
Alberta—				
Calgary.....	Mar. 27-Apr. 2....	7	1	
Ontario—				
Toronto.....	do.....	4	—	
China:				
Amoy.....	Feb. 20-26.....	1	—	
Great Britain:				
England and Wales.....	Mar. 6-26.....	1,258	—	
India:				
Bombay.....	Feb. 27-Mar. 5.....	71	37	
Calcutta.....	do.....	248	170	Jan. 23-Mar. 5, 1927: Cases, 11,158; deaths, 2,727.
Karschi.....	do.....	4	—	
Madras.....	Mar. 6-12.....	20	—	
Rangoon.....	Feb. 27-Mar. 5.....	42	6	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued
Reports Received During Week Ended April 22, 1927—Continued
SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Iraq: Baghdad	Feb. 12	2	—	
Mexico: Manzanillo	Mar. 29-Apr. 4	—	4	
San Luis Potosi	Mar. 27-Apr. 2	—	1	
Portugal: Lisbon	Mar. 20-26	2	—	
Siam	—	—	—	Feb. 20-26, 1927: Cases, 8; deaths, 7.
Bangkok	Feb. 20-26	6	5	Apr. 1, 1926—Feb. 26, 1927: Cases, 761; deaths, 290.
Sumatra: Medan	do	1	—	District.

TYPHUS FEVER

Algeria: Algiers	Mar. 1-10	7	—	
Chile: Concepcion	Sept. 15-Nov. 15	1	—	Sept. 15-Nov. 15, 1926: Cases, 39; deaths, 4.
Lebu	do	6	2	
Linares	do	2	—	
Los Andes	do	8	—	
Santiago	do	18	2	
Valparaiso	do	4	—	
Do.	Mar. 13-19	1	—	
Czechoslovakia	Jan. 1-Feb. 28	48	—	Years 1924-1926: Cases, respectively, 43, 21, 25.
Estonia	—	—	—	
Mexico: Mexico City	Mar. 13-19	2	—	Including municipalities in Federal district.
Palestine: Nazareth district	Mar. 1-7	1	—	
Spain: Seville	Mar. 16-22	—	1	

Reports Received from January 1 to April 15, 1927¹
CHOLERA

Place	Date	Cases	Deaths	Remarks
China: Canton	Nov. 1-30	10	3	
Chungking	Nov. 14-20	—	—	Present.
Do.	Jan. 2-Feb. 10	—	—	Do.
Tsingtao	Nov. 14-Dec. 11	—	—	Do.
Chosen	Sept. 1-Oct. 31	282	159	
French Settlements in India	Aug. 29-Dec. 18	131	97	
India: Do.	Oct. 10-Jan. 1	—	—	Cases, 20,298; deaths, 3,507.
Bombay	Jan. 2-22	—	—	Cases, 9,029; deaths, 5,063.
Calcutta	Jan. 9-20	2	1	
Do.	Oct. 31-Jan. 1	385	313	
Madras	Jan. 2-Feb. 20	454	350	
Do.	Dec. 26-Jan. 1	2	2	
Rangoon	Jan. 2-Mar. 5	9	7	
Do.	Nov. 21-Jan. 1	11	7	
Indo-China: Sagion	Jan. 2-Feb. 26	43	39	
Prvointe— Annam	July 1-Aug. 31	511	401	
Cambodia	do	727	472	
Cochin-China	do	432	349	
Kwang-Chow-Wan	do	703	361	
Laos	do	56	47	
Tonkin	do	1,017	646	

¹ From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from January 1 to April 15, 1927—Continued

CHOLERA—Continued

Place	Date	Cases	Deaths	Remarks
Japan:				
Hilogo	Nov. 14-20	3		
Philippine Islands:				
Manila	Oct. 31-Nov. 6	1		
Russia	Aug. 1-Sept. 30	8		
Siam:				
Do.	Apr. 1-Jan. 1			Cases, 7,847; deaths, 5,164.
Bangkok	Jan. 2-Feb. 12			Cases, 102; deaths, 142.
Do.	Oct. 31-Jan. 1	16	5	
Straits Settlements	Jan. 9-Feb. 12	14	5	
Singapore	July 25-Oct. 10		60	
	Nov. 21-Jan. 1	14	8	

PLAQUE

Algeria:				
Algeria	Reported Nov. 16	1		
Bona	Jan. 11-19	3	2	
Oran	Nov. 21-Dec. 10	32	22	
Tarafaraoui	Nov. 1-Dec. 9	10	9	Near Oran.
Angola:				
Benguela district	Oct. 1-Dec. 31	17	10	
Do.	Jan. 19-31	1		At Cavaco.
Cuanza Norte district	Dec. 1-31	18	10	
Mossamedes district	Dec. 16-31	10		
Do.	Jan. 19-31	3		At Port Alexander.
Argentina:				
Azores:				
St. Michaels Island—Furnas	Nov. 3-17	4	1	27 miles distant from port.
Brazil:				
Porto Alegre	Jan. 23	2	2	
Rio de Janeiro	Nov. 28-Dec. 4	2	2	
Do.	Dec. 26-Jan. 1	1	1	On vessel in harbor.
Do.	Jan. 2-8	1		
Sao Paulo	Nov. 1-14	1	1	
British East Africa:				
Kenya:				
Kisumu	Jan. 16-22	1	1	
Tanganyika Territory	Nov. 21-Dec. 18		12	
Uganda	Sept. 1-Oct. 31	162	152	
Canary Islands:				
Atarfe	Dec. 20	1	1	Vicinity of Las Palmas.
Las Palmas	Jan. 8-Feb. 12	2		
San Miguel	do	1		Vicinity of Santa Cruz de Tenerife.
Celebes:				
Makassar	Dec. 22			Outbreak.
Ceylon:				
Colombo	Nov. 14-Dec. 11	3	1	2 plague rodents.
Do.	Jan. 2-Feb. 26	30	15	9 plague rodents.
China:				
Mongolia	Reported Dec. 21	500		
Nanking	Oct. 31-Dec. 18			Present.
Do.	Feb. 6-Mar. 5			Do.
Ecuador:				
Guayaquil	Nov. 1-Dec. 31	26	8	Rats taken, 80,615; found infected, 184.
Do.	Jan. 1-Feb. 15	43	10	Rats taken, 36,124; found infected, 129.
Egypt:				Cases, 149.
Do.	Jan. 1-Dec. 9			Cases 13.
Alexandria	Jan. 1-28			At Zagazig (Tel el Kebir).
Charikla Province	Nov. 19-Dec. 2	2		
Gharbin Province	Jan. 5	1	1	
Kafir el Sheikh	Jan. 4	1	1	
Marsa Matrah	Dec. 3-9	2		
Do.	Dec. 23-29	10		
Tanta district	Jan. 27	1		
Greece:				
Athens	Nov. 19-Dec. 20	3		Athens and Piraeus.
Patras	Nov. 1-30	10	1	
Pravli	Nov. 1-Dec. 31	9	4	
	Nov. 28-Dec. 4		1	
	Nov. 27	1	1	Province of Drama-Kevalla.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from January 1 to April 15, 1927—Continued

PLAQUE—Continued

Place	Date	Cases	Deaths	Remarks
India	Oct. 10-Jan. 1			Cases, 16,162; deaths, 9,905.
Do.	Jan. 2-22			Cases, 4,535; deaths, 3,047.
Bombay	Nov. 21-27	1	1	
Do.	Jan. 16-Feb. 12	4	4	
Madras	Jan. 31-Jan. 1	581	324	
Do.	Oct. 2-Feb. 12	572	363	
Rangoon	Nov. 14-Dec. 25	11	9	
Do.	Jan. 2-Feb. 26	40	35	
Indo-China	July 1-Aug. 31			Cases, 34; deaths, 19.
Province				
Cambodia	do	10	10	
Cochin-China	do	14	9	
Kwang-Chow-Wan	do	10		July, 1925: Cases, 22; deaths, 18.
Iraq:				
Baghdad	Jan. 23-Feb. 5	2	1	
Java:				
Batavia	Nov. 7-Jan. 1	91	90	Province.
Do.	Jan. 2-Feb. 26	202	195	
East Java and Madura	Oct. 24-Jan. 1	17	17	
Do.	Jan. 2-Feb. 12	12	12	
Madagascar:				
Province				
Ambositra	Dec. 16-31	10	10	
Do.	Jan. 1-15	9	9	
Analamava	Oct. 16-31	1	1	
Antsirabe	Dec. 16-31	2	2	
Do.	Jan. 1-15	5	5	
Diego-Suarez	do	4	4	
Itasy	Oct. 16-Dec. 31	39	39	
Do.	Jan. 1-15	8	8	
Maevatanana	Oct. 16-31	10	10	
Majunga	do	3	1	
Moramanga	Oct. 16-Dec. 31	92	67	
Do.	Jan. 1-15	29	27	
Tamatave	Oct. 16-Dec. 31	107	69	
Tananaive	do			Cases, 533; deaths, 407.
Do.	Jan. 1-15	104	99	
Town				
Tamatave	Nov. 16-30	2		
Tananaive	Oct. 16-Dec. 31	48	34	
Do.	Jan. 1-15	1	1	
Mauritius:				
Plaines Wilhems	Oct. 1-Nov. 30	3	3	
Pamplemousses	Dec. 1-31	3	3	
Port Louis	Oct. 1-Dec. 31	39	35	
Nigeria	Aug. 1-Nov. 30	999	902	
Peru	Nov. 1-Dec. 31			Cases, 90; deaths, 26.
Do.	Jan. 1-31	47	10	
Departments				
Ancash	Dec. 1-31	6	6	
Do.	Jan. 1-31			Present.
Cajamarca	do	36	6	
Ica				
Chincha	Nov. 1-30	1		
Lambayeque	do	3		Present in Province.
Chiclayo	do	2		
Libertad	Dec. 1-31	2		
Do.	Jan. 1-31	1		
Lima	Nov. 1-Dec. 31	42	14	
Do.	Jan. 1-31	46	10	
Portugal:				
Lisbon	Nov. 23-30	3	2	In suburb of Balem.
Russia	May 1-June 30	44		
Do.	July 1-Sept. 30	64		
Senegal	July 1-31	178	162	
Diourbel	Nov. 20-30	12	1	
Tivaouane	Dec. 19-25	6	2	
Siam	Apr. 1-Jan. 1			
Do.	Jan. 16-Feb. 12			
Syria:				
Beirut	Nov. 11-Dec. 20	4		
Do.	Feb. 1-10	1		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from January 1 to April 15, 1927—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Tunisia	Dec. 1-31			Cases, 48.
Do	Jan. 12-26			Cases, 34.
Acheche district	Feb. 11-14	14	14	Pneumonic.
Bousse	Jan. 12-26	8		
Djeneniana	Feb. 11-14	8		
Kairouan	do	3		
Mahares	do	15		
Sfax	Oct. 1-Dec. 31	304	128	
Turkey:				
Constantinople	Dec. 15-25	1		
Union of South Africa:				
Cape Province—				
Cradock district	Jan. 2-Feb. 19	3	1	
De Aar district	Nov. 21-27	1		Native.
Glen Gray district	Jan. 31-Feb. 12	8	8	
Hanover district	Nov. 14-Jan. 1	3	2	
Do	Jan. 2-8	1	1	
Middleburg district	Dec. 5-11	1	1	Do.
Orange Free State	do			Cases, 12; deaths, 2.
Bothaville district	Dec. 5-18	2	1	
Hoopstad district	Nov. 7-13	1	1	Native.
Do	Dec. 5-25	2	1	Do.
Vrededorp district	Jan. 2-Feb. 12	4		
Do	Dec. 19-25	10	5	
Do	Feb. 6-12	2	1	

SMALLPOX

Algeria	Sept. 21-Dec. 31			Cases, 797.
Do	Jan. 1-20	86		
Algiers	Dec. 11-31	4		
Do	Jan. 1-Feb. 10	3		
Angola	Oct. 1-15			Present in Congo district.
Cuanza Norte	Nov. 1-15			Present.
Arabia:				
Aden	Dec. 12-18	1		Imported.
Belgium	Oct. 1-10	1		
Brazil:				
Bahia	Oct. 30-Dec. 18	12	8	
Para	Oct. 31-Nov. 6		1	
Do	Feb. 5-12		1	
Pernambuco	Oct. 17-Dec. 25	58	4	
Rio de Janeiro	Year 1926			Cases, 4,083; deaths, 2,180.
Do	Jan. 2-Feb. 12	51	25	
Sao Paulo	Aug. 23-Dec. 5	34	18	
British East Africa:				
Tanganyika Territory	Oct. 31-Nov. 20	2		
Do	Jan. 2-15	34	7	
Zanzibar	Oct. 1-31	23	12	
British South Africa:				
Northern Rhodesia	Nov. 27-Dec. 3			Cases, 200. In natives.
Bulgaria	Nov. 1-30	1		
Canada:				
Do	Dec. 5-Jan. 1			Cases, 155.
Alberta	Jan. 2-Mar. 20			Cases, 501.
Do	Dec. 5-Jan. 1	132		
Calgary	Jan. 2-Mar. 26	177		
Do	Nov. 28-Dec. 25	12		
Edmonton	Jan. 2-Mar. 19	33		
Do	Dec. 1-31	4		
British Columbia	Jan. 1-31	5		
Vancouver	Jan. 31-Mar. 20	7		
Manitoba	Dec. 5-Jan. 1	9		
Do	Jan. 2-Mar. 12	20		
Winnipeg	Dec. 19-25	1		
Do	Jan. 2-Mar. 5	7		
New Brunswick	Feb. 13-26	2		
Ontario	Dec. 5-Jan. 1	96		
Do	Jan. 2-Mar. 26	257		
Kingston	Jan. 1-Feb. 19	3		
Ottawa	Dec. 12-31	5		
Do	Jan. 9-Mar. 26	6		
Toronto	Dec. 14-25	14		
Do	Jan. 1-Mar. 26	70	1	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from January 1 to April 15, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Canada—Continued.				
Saskatchewan.	Dec. 5-Jan. 1	18		
Do.	Jan. 2-Mar. 12	45		
Regina.	Jan. 16-22	1		
Chile:				
Concepcion.	Dec. 26-Jan. 1		5	
China:				
Amoy.	Jan. 1-15	1		
Canton.	Nov. 1-Dec. 31	6		Present.
Chefoo.	Jan. 23-Feb. 19			Do.
Chungking.	Nov. 7-Dec. 25			Do.
Do.	Jan. 2-Feb. 19			Do.
Foochow.	Nov. 7-Dec. 25			Do.
Hankow.	Nov. 6-30			Do.
Hongkong.	Jan. 23-Mar. 8	56	38	
Manchuria—				
Harbin.	Dec. 16-31	3		
Do.	Feb. 7-13	1		
Mukden.	Dec. 5-11	1		
Nanking.	Dec. 12-25			Do.
Do.	Jan. 2-Mar. 5			Do.
Shanghai.	Dec. 12-18		1	
Do.	Jan. 30-Feb. 26		2	
Swatow.	Nov. 21-27			Do.
Tientsin.	Jan. 16-Feb. 26	20		
Chosen.	Aug. 1-Nov. 30	53	19	
Seoul.	Nov. 1-30	2		
Egypt:				
Alexandria.	Jan. 8-14	1		
Cairo.	June 11-Aug. 26	27	4	
Estonia.	Oct. 1-30	2		
France:				
Paris.	Sept. 1-Dec. 31	293		
Do.	Dec. 1-31	10	3	
French Settlements in India.	Jan. 1-Feb. 20	17	3	
Germany:				
Stuttgart.	Aug. 29-Dec. 18	118	118	
Gold Coast.	Nov. 28-Dec. 4	7		
Great Britain:				
England and Wales.	Aug. 1-Nov. 30	59	14	
England.	Nov. 14-Jan. 1			Cases, 2,262.
Do.	Jan. 2-Mar. 5			Cases, 4,491.
Birmingham.	Mar. 13-19	5		
Bradford.	Jan. 9-22	2		
Cardiff.	Feb. 13-19	1		
Dundee.	Mar. 31	42		
Monmouthshire.	Feb. 25	22		
Newcastle-on-Tyne.	Dec. 5-13	2		
Do.	Jan. 2-Mar. 12	16		
Normanton.	Dec. 30	1		
Sheffield.	Nov. 28-Jan. 1	60		
Do.	Jan. 2-Mar. 19	523		
Wakefield.	Jan. 30-Feb. 2	2		
Greece.	Nov. 1-Dec. 31	25		
Athens.	Dec. 1-31	14	2	
Guatemala:				
Guatemala City.	Nov. 1-Dec. 31	15		
Do.	Jan. 1-Feb. 28	51		
India:				
Do.	Oct. 10-Jan. 1			Cases, 22,946; deaths, 6,006.
Bombay.	Jan. 2-22			Cases, 14,228; deaths, 3,495.
Do.	Nov. 7-Jan. 1	37	26	
Do.	Jan. 2-Feb. 26	223	118	
Calcutta.	Oct. 31-Jan. 1	449	311	
Do.	Jan. 2-Feb. 26	1,062	701	
Karachi.	Dec. 19-25	1	1	
Do.	Jan. 2-Feb. 26	28	25	
Madras.	Nov. 21-Jan. 1	32	2	
Do.	Jan. 2-Mar. 5	193	6	
Rangoon.	Nov. 28-Jan. 1	2	2	
Do.	Jan. 2-Feb. 26	107	23	
Indo-China:				Cases, 52; deaths, 10.
Province—	July 1-Aug. 31			
Annam.	do	11	5	
Cambodia.	do	18	7	
Cochin-China.	do	9	2	
Saigon.	Dec. 26-Jan. 1	3		
Laos.	July 1-Aug. 31	4	2	
Tonkin.	do	10	3	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from January 1 to April 15, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Iraq:				
Baghdad	Oct. 31-Dec. 4	7	4	
Do.	Jan. 23-29	1		
Basra	Nov. 7-13	1	1	
Italy:				
Genoa	Aug. 20-Jan. 1	28		
Do.	Dec. 30-31	1		
Jamaica	Jan. 1-10	2		
Do.	Nov. 26-Jan. 1	37		
Japan:				
Kobe	Jan. 2-Feb. 12	95		
Do.	Oct. 24-Dec. 25	25		
Yokohama	Nov. 14-20	1		
Java:				
Batavia	do	2		
East Java and Madura	Oct. 24-Dec. 25	11	1	
Do.	Jan. 9-27	4	3	
Lithuania	Nov. 1-30	2		
Luxemburg	Nov. 1-Dec. 31	2		
Mexico:				
Chihuahua	July 1-Oct. 31	584		
Do.	Dec. 31			
Ciudad Juarez	Jan. 31-Feb. 6		2	
Manzanillo	Dec. 14-27			
Mazatlan	Mar. 5-22	7		
Mexico City	Feb. 14-20		2	
Do.	Nov. 23-Dec. 25	6		
Nuevo Leon State—	Dec. 26-Feb. 26	5		
Cerralvo	Mar. 11			
Montemorelos	Feb. 24			
Monterey	Feb. 24-Mar. 20	64	2	
Parral	Jan. 31-Feb. 6			
Piedras Negras district	Feb. 25	68		
Saltillo	Feb. 6-12		1	
San Luis Potosi	Nov. 12-Dec. 18		3	
Do.	Jan. 9-Mar. 26		24	
Tampico	Jan. 21-31	1		
Torreón	Nov. 28-Jan. 1		12	
Do.	Jan. 2-Mar. 19		13	
Victoria	Feb. 24			
Netherlands East Indies	Dec. 14			
Nigeria	Aug. 1-Nov. 30	78	4	
Persia:				
Teheran	Nov. 22-Dec. 23		5	
Peru:				
Arequipa	Dec. 1-31		1	
Do.	Jan. 1-31		1	
Laredo	Dec. 1			
Poland	Oct. 11-Dec. 31			
Do.	Jan. 1-8			
Portugal:				
Lisbon	Nov. 22-Jan. 1	43	4	
Do.	Jan. 2-Mar. 12	29		
Rumania	Jan. 1-Sept. 30	7	1	
Russia:				
Do.	May 1-June 30	705		
Senegal:				
Dakar	July 1-Sept. 30	884		
Siam:				
Do.	Jan. 9-Mar. 6	3		
Bangkok	Apr. 1-Jan. 1			
Do.	Jan. 2-Feb. 19			
Sierra Leone:				
Makeni	Oct. 31-Jan. 1	28	10	
Naanowa	Jan. 2-Feb. 19	21	13	
Spain:				
Valencia	Feb. 22-28	3		
Straits Settlements:				
Singapore	Dec. 1-15	1		
Do.	July 1-Sept. 30		9	
Tunisia:				
Do.	Feb. 8-Mar. 19	7		
Tunis	Oct. 31-Jan. 1	12	2	
	Jan. 2-15	3	3	
	Oct. 1-Dec. 31	9		
	Jan. 1-20	8		
	Jan. 1-Mar. 10	3		

Reported as鼠pest.

Do.

Province.

Several cases; mild.

Present.

Including municipalities in Fed-

eral District.

Do.

Epidemic.

Reported present.

Other cases stated to exist.

Cases, 25. Unofficially reported.

At Nueva Rosita.

Present.

Island of Borneo; epidemic in

two villages.

Severe outbreak; vicinity of

Trujillo.

Cases, 32; deaths, 3.

Deaths, 1.

Cases, 711; deaths, 265.

Cases, 42; deaths, 14.

Pendembu district.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued
Reports Received from January 1 to April 15, 1927—Continued
SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Turkey:				
Constantinople	Feb. 1-7		1	
Union of South Africa:				
Cape Province—				
Albany district	Jan. 22-29			Outbreaks.
Caledon district	Dec. 5-11			Do.
Steynsburg district	do			Do.
Stutterheim district	Nov. 21-27			Do.
Wodehouse district	Jan. 30-Feb. 12			Do.
Natal—				
Durban district	Nov. 7-27	9		Including Durban municipality. Total from date of outbreak: Cases, 62; deaths, 46.
Orange Free State	Nov. 14-27			Outbreaks.
Bothaville district	Nov. 21-27			Do.
Transvaal	Nov. 7-20	2		Europeans.
Bethal district	Jan. 23-29			Outbreaks.
Johannesburg	Nov. 14-20	1		Do.
West Africa:				
French Guinea—				
Kissidougou	Feb. 19			Present.
French Sudan—				
Kayes	do			Do.
Yugoslavia	Nov. 1-Dec. 31	4	1	
Do	Jan. 1-31	3		

TYPHUS FEVER

Algeria	Sept. 21-Dec. 20	59	2	
Do	Jan. 1-20			
Algiers	Feb. 1-28	15		Cases, 21.
Argentina:				
Rosario	Dec. 1-31		1	
Do	Jan. 25-31		3	
Bulgaria	July 1-Dec. 31	39	5	
Chile:				
Concepcion	Jan. 23-29		1	
Valparaiso	Nov. 21-Dec. 25	5		
Do	Jan. 2-22	4	1	
China:				
Antung	Nov. 22-Dec. 5	4		
Chefoo	Oct. 24-Nov. 6			Present.
Chungking	Dec. 25-31			Do.
Chosen:				
Chosen	Aug. 1-Nov. 30	43	2	
Seoul	Nov. 1-30	1		
Do	Jan. 1-31	2	1	
Czechoslovakia	Oct. 1-Dec. 31	10		
Egypt:				
Alexandria	Dec. 3-9		1	
Do	Jan. 22-28	1		
Cairo	Oct. 29-Nov. 4	1	1	
Estonia	Dec. 1-31	1		
Do	Jan. 1-31	7		
France	Nov. 1-30	1		
Gold Coast	Sept. 1-30	1	1	
Greece	Nov. 1-30			
Athens	Nov. 1-Dec. 31	19	2	
Do	Feb. 1-28	4		
Drama	Dec. 1-31	2		
Kavalla	do	2		
Patras	Jan. 23-29		1	
Ravakan	do	1		
Saloniki	Jan. 25-31	1		
Indo-China:				
Tonkin	Aug. 1-31	2		
Ireland:				
Clare County—				
Tulla district	Jan. 9-15	1		
Italy	Aug. 29-Sept. 23	3		Suspect.
Japan:				
Tokyo Prefecture	Dec. 5-25	9		
Tokyo city	do	5	1	
Latvia	Jan. 1-31	2		
Lithuania	Sept. 1-Dec. 31	41	4	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from January 1 to April 15, 1927—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Mexico				
Aguascalientes	July 1-Oct. 31			Deaths, 534.
Durango	Jan. 9-Feb. 5	2		
Guadalajara	Jan. 1-31		1	
Mexico City	Jan. 25-31		1	
Do.	Dec. 5-11	3		
Do.	Jan. 2-Mar. 5	58		
Parral	Jan. 30-Feb. 5	1		
Nigeria	Sept. 1-30	1		
Palestine				Including municipalities in Federal District.
Acre	Dec. 29-Jan. 3	1		
Beisan	Dec. 21-27	1		
Haifa	Nov. 23-Dec. 13	5		
Do.	Dec. 28-Feb. 7	7		
Jaffa	Nov. 23-Dec. 27	7		
Do.	Jan. 11-Feb. 21	3		
Majdal	Dec. 28-Jan. 3	1		
Nazareth	Nov. 16-Jan. 3	12		
Ramleh	Jan. 31-Feb. 7	1		
Safad	Dec. 21-Jan. 3	2		
Peru				
Arequipa	Dec. 1-31	2		
Poland	Oct. 11-Dec. 25			Cases, 341; deaths, 27.
Do.	Jan. 1-Feb. 12			Cases, 414; deaths, 32.
Rumania				
Russia				
Do.	Aug. 1-Nov. 30	255	11	
Spain				
Tunisia				
Do.	May 1-June 30	6,043		
Do.	July 1-Aug. 31	3,060		
Turkey				
Constantinople	July 1-Sept. 30		4	
Do.	Oct. 1-Dec. 27	30		
Union of South Africa				
Cape Province	Jan. 1-20	21		
Do.	Jan. 21-31	1		
East London	Dec. 12-23	3		1 death reported by press.
Port St. Johns district	do	47	7	Cases, 233; deaths, 30.
Natal				
Do.	Jan. 1-31	38	4	Native. Imported.
Orange Free State				Outbreaks. On farm.
Do.	Nov. 21-27	1		
Transvaal				
Do.	Dec. 5-11			
Do.	Oct. 1-31	1		
Yugoslavia				
Do.	Jan. 1-31	6		Native.
Do.	Nov. 1-Dec. 31	30	2	
Do.	Jan. 1-Feb. 28	65	4	

YELLOW FEVER

	Dec. 19-25	1	1	
French Sudan	Aug. 1-Nov. 30	10	5	
Gold Coast	Sept. 1-Nov. 30	4	3	
Nigeria	Dec. 19-25	3	3	
Senegal	Dec. 6	1	1	
Diorbel	Jan. 1-20	1	1	At N'Bake.
Do.	Dec. 7	1	1	
Guinguineo	Nov. 27-Dec. 29	2	1	In European.
Rufisque	Jan. 2-8	3	3	
Do.	Oct. 25	2		
Volta				
Gaoua district				

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